ORDER NO. SD8003-1688

Service Manual

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SM-STS7
SERVICE MANUAL 2+

QUARTZ Synthesizer FM/AM Stereo Tuner

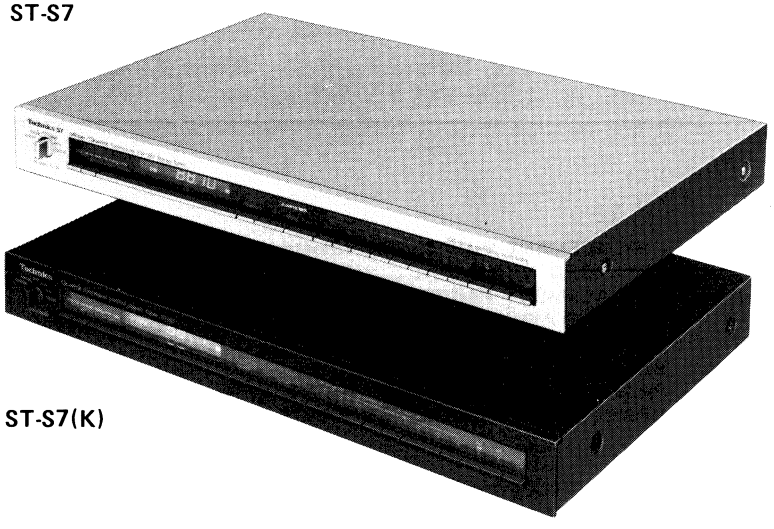
ST-S7

〔DX〕,〔DG〕,〔DM〕,〔EB〕,〔XE〕,
〔XSW〕,〔XGH〕,〔XGF〕,〔XA〕

ST-S7(K)

〔DX〕,〔DG〕,〔DM〕,〔EB〕,
〔XSW〕,〔XGH〕,〔XA〕

ST-S7



ST-S7(K)

Areas

* 〔DX〕 is available in Scandinavia except Denmark.
* 〔DG〕 is available in Scandinavia and European except Belgium, United Kingdom, Switzerland, Holland and France.
* 〔DM〕 is available in Denmark.
* 〔EB〕 is available in Belgium.
* 〔XE〕 is available in United Kingdom.
* 〔XSW〕 is available in Switzerland.
* 〔XGH〕 is available in Holland.
* 〔XGF〕 is available in France.
* 〔XA〕 is available in Asia, Latin America, Middle East and Africa.

*** The colors of this model include silver and black. The black type model is provided with (K) in the Service Manual.**

Notes:

* This unit is provided with the FM/AM allocation selector when needed for the area.
* The receivable frequency of FM and AM broadcast varies according to the position of this switch. When the FM/AM allocation selector is set at FM 50kHz/AM 9kHz step (or the unit is not provided with this switch), the receivable frequency is as follows: (FM: 87.50～108.00MHz) (AM: 522～1611kHz)
* When the FM/AM allocation selector is set at FM 200kHz/AM 10kHz step, the receivable frequency is as follows: (FM: 87.9～107.9MHz) (AM: 530～1620kHz)
* In the case of the unit without the FM/AM allocation selector, the broadcast can be received at FM 50kHz/AM 9kHz.

English

TECHNICAL SPECIFICATIONS (DIN 45 500)

Specifications are subject to change without notice for further improvement.

FM TUNER SECTION

Frequency range (Refer to Notes)	87.50 ~ 108.00 MHz
Sensitivity	0.95 μV (IHF, usable)
S/N 30 dB	0.95 μV (75Ω)
S/N 26 dB	0.85 μV (75Ω)
S/N 20 dB	0.75 μV (75Ω)
IHF 46 dB stereo quieting sensitivity	20 μV/75Ω
Total harmonic distortion	
MONO	0.1%
STEREO	0.15%
S/N	
MONO	69 dB (77 dB, IHF)
STEREO	65 dB (72 dB, IHF)
Frequency response	5 Hz~18 kHz, +0.2 dB~ −0.5 dB ±1.5 dB (5 Hz~18 kHz)
Alternate channel selectivity (±400 kHz)	85 dB
(±300 kHz)	55 dB
Capture ratio	1.0 dB
Image rejection at 98 MHz	80 dB
IF rejection at 98 MHz	110 dB
Spurious response rejection at 98 MHz	95 dB
AM suppression	55 dB
Stereo separation	
1 kHz	55 dB
10 kHz	40 dB
Carrier leak	
19 kHz	−65 dB (−70 dB, IHF)
38 kHz	−48 dB (−50 dB, IHF)
Channel balance (250 Hz~6,300 Hz)	±1.0 dB
Limiting point	0.7 μV
Bandwidth	
IF amplifier	180 kHz
FM demodulator	1000 kHz
Antenna terminals	75Ω (unbalanced) F-type coaxial

AM TUNER SECTION

Frequency range (Refer to Notes)	522~1611 kHz
Sensitivity (S/N 20 dB)	30 μV, 250 μV/m
Selectivity (±9 kHz)	55 dB
Image rejection at 999 kHz	50 dB
IF rejection at 999 kHz	45 dB

Technics

Matsushita Electric Trading Co., Ltd.
P.O. Box 288, Central Osaka Japan

TIMER SECTION

Clock	Quartz-lock type 24-hour indication
Precision	Within 0 sec.~+10 sec. monthly (at 25°C)
Functions	24-hour programmable; everyday (2 times), once only (1 time)
Programmable content	On/off of program source (FM, AM) Designation of preset station
Setting intervals	1 minute~23 hours, 59 minutes (at 1-min. intervals)
Priority order	Once, everyday 2, everyday 1
Memory "back-up"	About 3 months (without AC power)

GENERAL

Output voltage	0.3 V (0.6 V, IHF)
Power consumption	9.9W
Batteries	DC 4.5 V (3"AA" size batteries, UM-3 or equivalent for memory "back-up")
Power supply	AC 50 Hz/60 Hz, 110V/120V/220V/240V
Dimensions (W×H×D)	430 × 53 × 310 mm (16-15/16" × 2-3/32" × 12-7/32")
Weight	4.0 kg (8.8 lb.)

■ CONTENTS

	Page
LOCATION OF CONTROLS	3~4
ADJUSTMENT POINTS	5
ADJUSTING INSTRUCTIONS (English)	6~8
PRECAUTIONS FOR REPAIR	8
EINSTELLUNGSANWEISUNGEN (Deutsch)	9~11
INSTRUCTIONS DE REGLAGE (Français)	12~14
DISASSEMBLY INSTRUCTIONS	15
TECHNICAL GUIDE	16~17
REPLACEMENT PARTS LIST (Electric Parts)	18
EXPLODED VIEWS	19~21
REPLACEMENT PARTS LIST (Cabinet and Chassis Parts)	22
POWER SOURCE CIRCUITS	23
SCHEMATIC DIAGRAM	24~28
BLOCK DIAGRAM	29~30
PRINTED CIRCUIT BOARD WIRING VIEW	31~32
RESISTOR AND CAPACITOR PARTS LIST	33~34

Deutsch

TECHNISCHE DATEN (DIN 45 500)

Spezifikationen können infolge von Verbesserungen ohne Ankündigung geändert werden.

UKW-TUNERTEIL

Wellenbereich	87,50~108,00 MHz
Eingangsempfindlichkeit	0,95 µV (nutzbar nach IHF)
S/R 30 dB	0,95 µV (75 Ω)
S/R 26 dB	0,85 µV (75 Ω)
S/R 20 dB	0,75 µV (75 Ω)
Stereoumschaltschwelle bei 46 dB nach IHF	20 µV/75 Ω
Gesamtklirrfaktor	
Mono	0,1%
Stereo	0,15%
Geräuschabstand	
Mono	69 dB (77 dB nach IHF)
Stereo	65 dB (72 dB nach IHF)
Frequenzgang	5 Hz ~ 18 kHz (+0,2 dB ~ −0,5 dB) ±1.5 dB (5 Hz~18 kHz)
Trennschärfe bei Störsender (±400 kHz)	85 dB
(±300 kHz)	55 dB
Einfangverhältnis	1,0 dB
Spiegelfrequenz-Dämpfung bei 98 MHz	80 dB
ZF-Dämpfung bei 98 MHz	110 dB
Ansprechdämpfung auf Nebenfrequenzen bei 98 MHz	95 dB
AM-Unterdrückung	55 dB
Übersprechdämpfung	
1 kHz	55 dB
10 kHz	40 dB
Trägerrest	
19 kHz	−65 dB (−70 dB nach IHF)
38 kHz	−48 dB (−50 dB nach IHF)
Kanalabweichung (250 Hz ~ 6300 Hz)	±1,0 dB
Begrenzereinsatz	0,7 µV
Bandbreite	
ZF-Verstärker	180 kHz
UKW-Demodulator	1000 kHz
Antennenanschluß	75 Ω (unsymmetrisch) 75 Ω F-Typ

AM-TUNERTEIL

Wellenbereiche	522 ~ 1611 kHz
Eingangsempfindlichkeit (S/R 20 dB)	30 µV, 250 µV/m
Trennschärfe (±9 kHz)	55 dB
Spiegelfrequenz-Dämpfung bei 999 kHz	50 dB
ZF-Dämpfung bei 999 kHz	45 dB

TIMER

Uhr	Quarzuhr mit 24-Stunden-Anzeige
Genauigkeit	max. 10 Sek./Monat (bei 25°C)
Funktionen	24-Stunden-Programmierung für täglichen (2-fach) und einmaligen Betrieb (einfach)
Programmierung	Ein- und Ausschalten der Tonquelle (FM, AM)
Einschaltdauer	1 Min. bis 23 Stdn. 59 Min. (in 1-Minuten-Intervallen)
Prioritätenfolge	"once", "everyday 2", "everyday 1"
Sicherung der im Speicher enthaltenen Informationen	etwa 3 Monate (ohne Netzstromversorgung)

ALLIGEMEINE DATEN

Ausgangsspannung	0,3 V (0,6 V, IHF)
Leistungsaufnahme	9,9 W
Batterien für den Speicher (Sonderzubehör)	drei Batterien "AA" (4,5 V)
Netzspannung	Wechselstrom 50 Hz/60 Hz, 110V/120V/220V/240V
Abmessungen (B×H×T)	430 × 53 × 310 mm
Gewicht	4,0 kg

CARACTERISTIQUES TECHNIQUES Sujet à changement sans préaris.

(DIN 45 500)

SECTION SYNTONISATEUR FM

Gamme de fréquence	87,50~108,00 MHz
Sensibilité	0,95 μV (IHF utilisable)
S/B 30 dB	0,95 μV (75Ω)
S/B 26 dB	0,85 μV (75Ω)
S/B 20 dB	0,75 μV (75Ω)
Sensibilité stéréo au seuil de 46 dB, IHF	20 μV/75Ω
Distorsion harmonique totale	
MONO	0,1%
STEREO	0,15%
Signal/Bruit	
MONO	69 dB (77 dB, IHF)
STEREO	65 dB (72 dB, IHF)
Réponse de fréquence	5 Hz~18 kHz, +0,2 dB~ −0,5 dB ±1,5 dB (5 Hz~18 kHz)
Sélectivité alternée par canal (±400 kHz)	85 dB
(±300 kHz)	55 dB
Taux de capture	1,0 dB
Rejection d'image à 98 MHz	80 dB
Rejection FI à 98 MHz	110 dB
Rejection de réponse parasite à 98 MHz	95 dB
Suppression AM	55 dB
Séparation stéréophonique	
1 kHz	55 dB
10 kHz	40 dB
Fuite de porteuse	
19 kHz	−65 dB (−70 dB, IHF)
38 kHz	−48 dB (−50 dB, IHF)
Equilibrage de canaux (250 Hz~6,300 Hz)	±1,0 dB
Point de limite	0,7 μV
Largeur de bande	
Amplificateur FI	180 kHz
Démodulateur FM	1000 kHz
Bornes d'antenne	75Ω (asymétrique) 75Ω F-type

SECTION SYNTONISATEUR AM

Gamme de fréquence	522~1611 kHz
Sensibilité (S/B 20 dB)	30 μV, 250 μV/m
Sélectivité (±9 kHz)	55 dB
Réjection d'image à 999 kHz	50 dB
Réjection FI à 999 kHz	45 dB

PROGRAMMATEUR

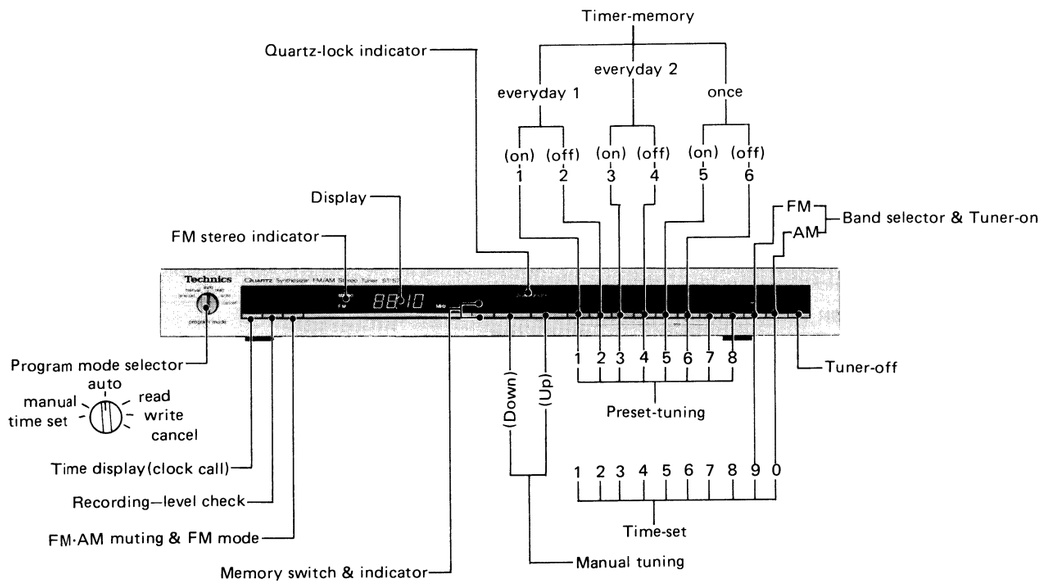
Horloge	Du type verrouillage à quartz Affichage basé sir le système des 24 heures
Précision	Marge de 0 à +10 secondes, mensuellement (à 25°C)
Fonctions	Programmations possibles sur 24 heures: tous les jours (deux fois), une fois seulement (une fois)
Eléments de programmation	Programmation de sources sonores (marche/arrêt) (FM, AM)
Intervalles de réglage	De 1 minute à 23 heures, 59 minutes (par intervalles de 1 minute)
Ordre de priorité	"once" (une fois), "everyday 2" (tous les jours 2), "everyday 1" (tous les jours 1)
Durée des fonctions de mémoire	Environ 3 mois (sans alimentation CA)

DIVERS

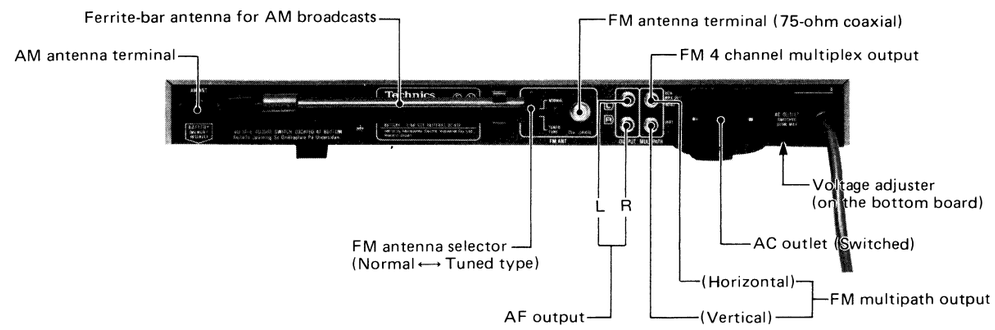
Tension de sortie	0,3V (0,6V, IHF)
Consommation	9,9W
Piles pour préservation des mémoires (en option)	trois piles de type AA (C. C.: 4,5V)
Alimentation	CA 50 Hz/60 Hz, 110V/120V/220V/240V
Dimensions (L×H×Pr)	430 × 53 × 310 mm
Poids	4,0 kg

■ LOCATION OF CONTROLS

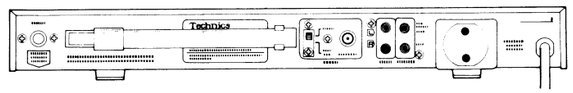
● Front panel view



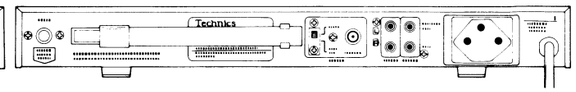
● Rear panel view **This photo is available in [DX, DG, EB, XGH] and [XGF] areas.**



This figure is available in [DM] area.
(for Denmark)



This figure is available in [XSW] area.
(for Switzerland)



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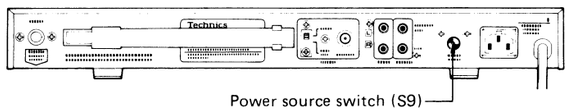
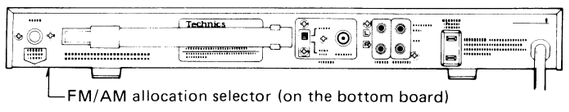
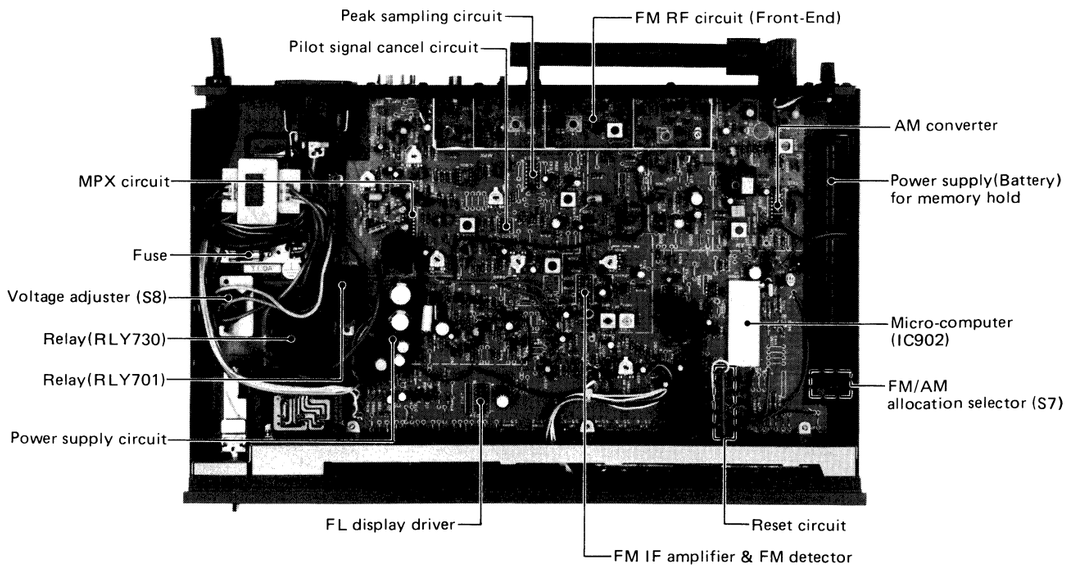
(for United Kingdom)



This figure is available in [XA] area.
(for Asia, Latin America, Middle East and Africa)



● Inside view

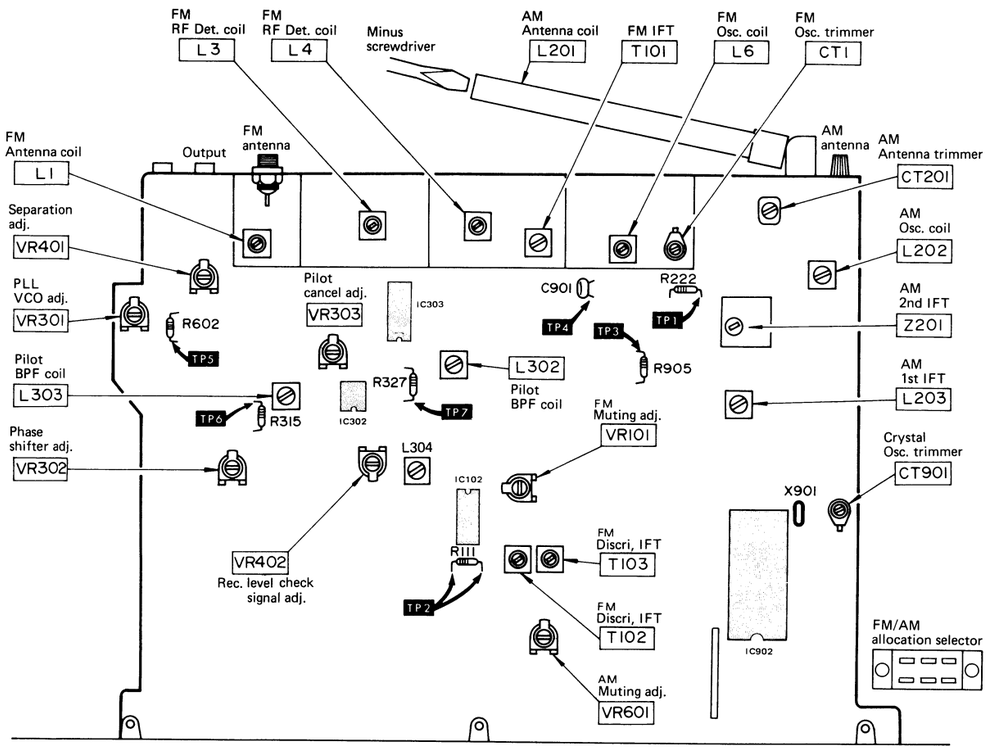


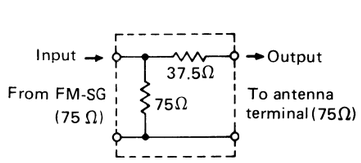
Relay(RLY730) and FM/AM allocation selector are not equipped on units some areas.

■ ADJUSTMENT POINTS

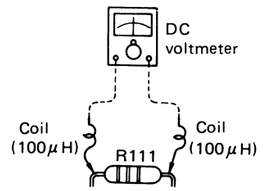
(Abgleichspunkte)
(Points de réglage)

Notes: * L304 have been already adjusted. So, do not turn the core.
*** FM/AM allocation selector is not equipped on units some areas.**

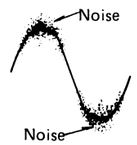




(75Ω FM dummy antenna)
Fig. 1 (Abb. 1)



(IF voltage adjustment)
Fig. 2 (Abb. 2)



(AF output waveform)
Fig. 3 (Abb. 3)

(Pilot signal cancel)
Fig. 4 (Abb. 4)

■ ADJUSTING INSTRUCTIONS ENGLISH

*** In the case of the unit without the FM/AM allocation selector, the broadcast can be received at FM 50kHz/AM 9kHz.**
In the case of the unit with the FM/AM allocation selector, shift the switch to FM 200kHz/AM 10kHz step.
The AM adjusting frequency for the unit provided with this switch is shown in the parenthesis.

AM ADJUSTMENT

• Setting and Equipment used
1. AC and DC electronic voltmeters (VTVM)
2. AM signal generator (AM-SG)
3. Set program mode selector to "manual" position.
4. Maintain line voltage at rated voltage.
5. Output of signal generator should be no higher than necessary to obtain an output reading.
6. Adjust the antenna coil (L201) position by using a screwdriver so that it is at approximately 25 degrees to the rear panel.
7. Set input selector to "AM" position.
8. Use a non-metal screwdriver for the adjustment.
9. Set AM muting switch to "off" position.

Step No.	AM SIGNAL GENERATOR CONNECTION	AM SIGNAL GENERATOR FREQUENCY	DISPLAY FREQUENCY BY PRESET	PREPARATIONS	PARTS ADJUSTED	ADJUSTING PROCEDURE
	AM-IF ADJUSTMENT					
1	Connect AM-SG to AM antenna terminal through 200pF capacitor. Common to chassis. (Powerful input)	450kHz (30% Mod. with 400Hz)	Frequency of non-interference	Connect to AC VTVM or scope to "OUTPUT" terminals of the set.	L203 (1st IFT) Z201 (2nd IFT)	• Adjust the input frequency and adjustment points so that the output becomes maximum.
	AM-RF ADJUSTMENT					
2	Connect AM-SG to AM antenna terminal through 200pF capacitor. Common to chassis. (Weak input)	522kHz (**530kHz**) (30% Mod. with 400Hz)	522kHz (**530kHz**)	Connect DC VTVM to **TP1** terminal.	L202 (OSC Coil)	Adjust L202 to 1.0V (**1.1V**) ± 0.05V.
3		612kHz (**610kHz**) (30% Mod. with 400Hz)	612kHz (**610kHz**)	Connect AC VTVM or scope to "OUTPUT" terminals of the set.	L201 (ANT Coil)	1. Adjust for maximum output. 2. Adjust ferrite core of L201 by screw driver.
4		1503kHz (**1500kHz**) (30% Mod. with 400Hz)	1503kHz (**1500kHz**)	Connect AC VTVM or scope to "OUTPUT" terminals of the set.	CT201(ANT Trimmer)	1. Adjust for maximum output 2. Repeat steps (3) and (4) until the frequency correctly matches the dial display.
	AM MUTING ADJUSTMENT					
5	Connect AM-SG to AM antenna terminal through 200pF capacitor. Common to chassis. (Apply about 35dB to antenna terminal.)	1503kHz (**1500kHz**) (30% Mod. with 400Hz)	1503kHz (**1500kHz**)	Connect AC VTVM or scope to "OUTPUT" terminals of the set.	VR601 (AM Muting)	With the AM muting switch set to "on" adjust VR601 so that the output is given with muting condition released.

FM ADJUSTMENT

• Equipment used
1. FM signal generator (FM-SG)
2. Stereo modulator (or separation meter)
3. Distortion analyser
4. Oscilloscope
5. AC and DC electronic voltmeters (VTVM)
6. Frequency counter (19kHz and 108MHz measurable)
7. FM 75Ω dummy antenna (Fig. 1) and low-pass filter (fc: 15kHz ~ 19kHz)

• Preparation of FM signal generator (FM-SG)
1. Connect stereo modulator to FM-SG.
2. Apply SG output to antenna terminal of the set through 75Ω FM dummy antenna.
3. The standard input of the set is 60dB (1mV), 400Hz 100% modulation (Because of using dummy antenna, SG output must be 12dB plus (IHF). That is, when input is 60dB, SG output is to be 72dB.)

• Setting
1. Set FM muting switch to "off" position.
2. Set FM antenna selector to "normal" position.
3. Set recording-level check switch to "off" position.
4. Set input selector to "FM" position.
5. Other setting are the same as in AM adjustment.

Step No.	FM SIGNAL GENERATOR CONNECTION	FM SIGNAL GENERATOR FREQUENCY	DISPLAY FREQUENCY BY PRESET	INDICATOR	ADJUSTMENT POINTS	REMARKS
	FM-IF ADJUSTMENT					
6	–	No-Signal	Frequency of non-interference	Connect DC VTVM to **TP2** (both side of R111) through choke coil. (Refer to Fig. 2)	T102 (Discri. IFT)	Adjust T102 core so that voltage measured in signal mode is 0V in 300mV range.
	OSC ADJUSTMENT					
7	–	No-Signal	87.9MHz	Connect DC VTVM to **TP3** terminal.	L6 (OSC Coil)	Adjust L6 so that voltage measured by DC voltmeter is 4.1V.

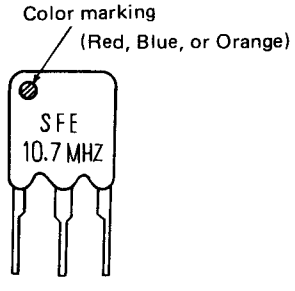
Step No.	FM SIGNAL GENERATOR CONNECTION	FM SIGNAL GENERATOR FREQUENCY	DISPLAY FREQUENCY BY PRESET	INDICATOR	ADJUSTMENT POINTS	REMARKS
	CRYSTAL OSC ADJUSTMENT					
8	–	No-Signal	87.9MHz	• Connect frequency counter to TP4 terminal. • Check the color marking of ceramic filter (CF101~104). (All 4 filters are of same color.)	CT901 (Crystal OSC Trimmer)	When blue-marked ceramic filter is used, adjust the output frequency from TP4 to 98.5751 MHz. Also, adjust the frequency to 98.6251MHz in orange- marked, and to 98.6001MHz in red-marked.
	FM RF ADJUSTMENT					
9	–	No-Signal	87.9MHz	Connect DC VTVM to TP3 terminal	L6 (OSC Coil)	Adjust L6 (OSC Coil) to 4.1V.
10	Connect FM-SG to FM antenna terminal through 75Ω FM dummy antenna.	90.1MHz (100% Mod. with 400Hz) weak input	90.1MHz	Connect scope to "OUTPUT" terminals of the set.	L3 (RF DET Coil, 1st) L4 (RF DET Coil, 2nd) L1 (ANT Coil) T101 (FM IFT)	1. Add weak input so that noise is included in the output wave form. 2. Make the adjustment so that the output wave form is vertically symmetrical. Refer to Fig. 3. 3. Repeat the steps (10) and (11) until the frequency correctly matches the dial display.
11		106.1MHz (100% Mod. with 400Hz)	106.1MHz	Connect scope to "OUTPUT" terminals of the set.	CT1 (OSC Trimmer)	
	FM MONO DISTORTION ADJUSTMENT					
12	Connect FM-SG to FM antenna terminal through 75Ω FM dummy antenna.	100.1MHz (100% Mod. with 400Hz)	100.1MHz	Connect distortion analyser to "OUTPUT" terminals of the set.	T103 (Discri. IFT)	1. Set the FM muting/FM mode switch to "on/auto" and then check step (6) in no signal mode. 2. If it is deflected, readjust of T102. 3. Adjust T103 core so that distortion of right and left channels are minimized.
	FM MUTING LEVEL ADJUSTMENT					
13	Connect FM-SG to FM antenna terminal through 75Ω FM dummy antenna. (Apply 10dB to the set.)	100.1MHz (100% Mod. with 400Hz	100.1MHz	Connect AC VTVM or scope to "OUTPUT" terminals of the set.	VR101 (Muting Level)	1. Set the FM muting/FM mode switch to "off/mono". 2. With the FM muting/FM mode switch set to "on/auto", adjust VR101 so that the output is given with muting condition released.
	FM MPX PILOT (VCO) ADJUSTMENT					
14	Connect FM-SG to FM antenna terminal through 75Ω FM dummy antenna. (Monaural signal)	100.1MHz (Non-modulated)	100.1MHz	Connect frequency counter to TP5 terminal.	VR301 (VCO)	1. Set the FM muting/FM mode switch to "on/auto". 2. Adjust VR301 to 19kHz±30Hz.
	PILOT BAND-PASS FILTER ADJUSTMENT					
15	Connect FM-SG to FM antenna terminal through 75Ω FM dummy antenna. (Pilot 10% Mod. stereo signal)	100.1MHz (Non-modulated)	100.1MHz	Connect AC VTVM to TP6 terminal.	L302 L303 (Band Pass Filter)	1. Set the FM muting/FM mode switch to "on/auto". 2. Adjust L302 and L303 so that output voltage is maximum.
	PILOT CANCEL ADJUSTMENT					
16	Connect FM-SG to FM antenna terminal through 75Ω FM dummy antenna. (Pilot 10% Mod. stereo signal)	100.1MHz (Non-modulated)	100.1MHz	Connect scope to TP7 terminal.	L302 VR303 (Pilot Cancel)	1. Set the FM muting/FM mode switch to "on/auto" 2. Adjust L302 and VR303 alternately so that the output voltage of TP7 is minimized and the waveform is as shown in Fig. 4.
	PHASE SHIFTER ADJUSTMENT					
17	Connect FM-SG to FM antenna terminal through 75Ω FM dummy antenna. (Pilot 10% Mod. stereo signal)	100.1MHz (100% Mod. with 400Hz (L mode)	100.1MHz	Connect AC VTVM to left ch. "OUTPUT" terminals of the set.	VR302 (Phase Shift)	1. Set the FM muting/FM mode switch to "on/auto". 2. Adjust VR302 so that L ch. output is maximum.

Step No.	FM SIGNAL GENERATOR CONNECTION	FM SIGNAL GENERATOR FREQUENCY	DISPLAY FREQUENCY BY PRESET	INDICATOR	ADJUSTMENT POINTS	REMARKS
	STEREO DISTORTION ADJUSTMENT					
18	Connect FM-SG to FM antenna terminal through 75Ω FM dummy antenna. (Pilot 10% Mod. stereo signal)	100.1MHz (100% Mod. with 400Hz) (L mode)	100.1MHz	Connect AC VTVM to "OUTPUT" terminals of the set through low-pass filter. (fc=15kHz~19kHz)	T101 (IFT)	1. Set the FM muting/FM mode switch to "on/auto". 2. Re-adjust the already adjusted T101 within ±90° from the preset core position so that the distortion of Lch is minimized. 3. Re-check the steps 6, 7, 10, 11 and 12.
	SEPARATION ADJUSTMENT					
19	Connect FM-SG to FM antenna terminal through 75Ω FM dummy antenna. (Pilot 10% Mod. stereo signal)	100.1MHz (100% Mod. with 1kHz) (L or R mode)	100.1MHz	Connect AC VTVM to "OUTPUT" terminals of the set through low-pass filter. (fc=15kHz~19kHz)	VR401 (Separation)	1. Set the FM muting/FM mode switch to "on/auto". 2. Adjust VR401 so that R output is minimized when stereo modulator is in L (Lch modulation) mode and that L output is minimized in R mode.
	RECORDING-LEVEL CHECK SIGNAL ADJUSTMENT					
20	Connect FM-SG to FM antenna terminal through 75Ω FM dummy antenna. (Pilot 10% Mod. stereo signal)	100.1MHz (90% Mod. with 400Hz) (L+R mode)	100.1MHz	Connect AC VTVM to "OUTPUT" terminals of the set.	VR402 (Rec. level)	1. Adjust so that output voltage is 0dB when 60dB signal is applied to the set. 2. Set the rec level switch to "on". 3. Adjust VR402 so that output is −6dB.

■ PRECAUTIONS FOR REPAIR

• Ceramic filters (CF101 ~ CF104)

The ceramic filters for FM-IF circuit are available in 3 ranks. In this set, be sure to use ceramic filters of the same rank in pair.
Since the ceramic filters are different in rank, the use of diodes (D916, D917) and the crystal adjusting frequency must vary in accordance with the rank of ceramic filter. (Refer to "Crystal Osc Adjustment" on page 7.)



RANK (color)	D916	D917	ADJUSTMENT FREQUENCY	CENTER FREQUENCY
Red	X	X	98.6001 MHz	10.700 MHz
Orange	X	O	98.6251 MHz	10.725 MHz
Blue	O	O	98.5751 MHz	10.675 MHz

Note: O Mark → Diode is used.
X Mark → Diode is not used.

When frequency is not indicated, FL (display tube), FL driver, digit circuit, and micro-computer must be checked by oscilloscope.
In this case, take care not to allow shortcircuit between IC terminals or application of voltage from measuring instrument to IC terminals.

■ EINSTELLUNGSANWEISUNGEN — DEUTSCH

*** Falls die Einheit keinen UKW/MW-Wellenverteilungs-Wahlschalter hat, kann die Rundfunksendung auf UKW 50 kHz/MW 9 kHz empfangen werden.**
*** Falls die Einheit mit einem UKW/MW-Wellenverteilungs-Wahlschalter ausgestattet ist, den Schalter auf UKW 50kHz/MW 9kHz einstellen.**

AM (MW)-EINSTELLUNG

• Stellungen und zu benutzende Geräte
1. Elektronische Voltmeter für Wechsel- und Gleichstrom (VTVM)
2. AM (MW)-Meßsender (AM-SG)
3. Den Programm-Betriebsart-Wahlschalter auf "manual" einstellen.
4. Netzspannung auf ihren Sollwerthalten.
5. Der Ausgang des Meßsenders darf nicht höher sein als unbedingt notwendig für eine gute Ablesung.
6. Nittels eines Schraubenziehers die Stellung der Antennenspule (L201) so einstellen, daß, sie gegen die Rückenplatte einen Winkel von ca. 25° macht.
7. Den Eingangswähler auf die "AM"-Position stellen.
8. Einen nichtmetallischen Schraubenzieher für die Einstellungen verwenden.
9. Den MW-Stummabstimmungsschalter auf die "off" (aus)-Stellung stellen.

Nr.	AM (MW)-MESSENDER ANSCHLUSS	AM (MW)-MESSENDER FREQUENZ	ANZEIGE-FREQUENZ DURCH VOR-EINSTELLUNG	VORBEREITUNG	ABGLEICHSPUNKTE	ABGLEICHSVERFAHREN
	AM(MW)-ZF-ABGLEICH					
1	Einen MW-Signal-generator über einen 200pF Kondensator mit dem MW-Anten-neneingang verbinden. Die gemeinsame Leitung mit dem Chassis verbinden. (Starker Eingang)	450kHz (400Hz Modulat., 30%)	Kein Empfang	Oszilloskop oder Wech-selstrom-Voltmeter an Ausgangsklemme (OUT-PUT) Schließen.	L203 (1. IFT) Z201 (2. IFT)	Die Eingangsfrequenz und die Einstellungspunkte so adustie-ren, daß der Ausgang den maximalen Wert erreicht.
	AM(MW)-HF-ABGLEICH					
2	Einen MW-Signal-generator über einen 200pF Kondensator mit dem MW-Anten-neneingang verbinden. Die gemeinsame Leitung mit dem Chassis verbinden. (Schwacher Eingang)	522kHz (400Hz Modulat., 30%)	522kHz	Zwischen TP1 und Erdung Gleichstrom-Voltmeter schließen.	L202 (Osc. Spule)	L202 so justieren, daß die vom Gleichstrom-Voltmeter gemessene.
3		612kHz (400Hz Modulat., 30%)	612kHz	Oszilloskop oder Wech-selstrom-Voltmeter an Ausgangsklemme (OUT-PUT) Schließen.	L201 (Ant. Spule)	1. Auf max. Ausgang abgleichen. 2. Den Ferritkern von L201 mit einem Schraubendreher justieren.
4		1503kHz (400Hz Modulat., 30%)	1503kHz	Oszilloskop oder Wech-selstrom-Voltmeter an Ausgangsklemme (OUT-PUT) Schließen.	CT201 (Ant.Trimmer)	1. Auf max. Ausgang abgleichen. 2. Die Schritte (3) und (4) wied-erholen, bis die Frequenz genau mit der Skalenanzeige übereinstimmt.
	AM (MW)-STUMMABSTIMMUNGSABGLEICH					
5	Einen MW-Signal-generator über einen 200pF Kondensator mit dem MW-Anten-neneingang verbinden. Die gemeinsame Leitung mit dem Chassis verbinden. (Ungefähr 35dB in den Antenneneingang leiten.)	1503kHz (400Hz Modulat., 30%)	1503kHz	Oszilloskop oder Wech-selstrom-Voltmeter an Ausgangsklemme (OUT-PUT) Schließen.	VR601	"Muting" Schalter auf "on" stellen, VR601 so einstellen, daß der Ausgang unter Bewirken der Dämpfung gegeben wird.

FM (UKW)-EINSTELLUNG

• Verwendete Einrichtungen
1. UKW-Meßsender (FM-SG)
2. Stereo-Modulator (oder Trennmesser)
3. Verzerrungsmesser
4. Oszilloskop
5. Elektronische Voltmeter für Wechsel- und Gleichstrom (VTVM)
6. Signalfrequenzmesser (meßbar für 19 kHz und 108 MHz)
7. UKW 75 Ohm Kunstantenne (Abb. 1) und Tiefpaßfilter (fc = 15 ~19 kHz)

• Vorbereitung AM UKW-Messender (FM-SG)
1. Stereo-Modulator an FM-SG anschließen.
2. SG-Ausgang über 75-Ohm UKW Kunstantenne an den Antennen-eingang des Gerätes schließen.
3. Der normale Eingang des Gerätes beträt 60 dB (1 mV), 400 Hz 100% Modulation. (Wegen Verwendung der Kunstantenne muß der Signalausgang 12 dB plus (IHF) sein: d.h. beim Eingang von 60 dB soll der Signalausgang 72 dB sein.)

• Zustand des Gerätes
1. Den UKW-Stummabstimmungsschalter ausschalten.
2. Den UKW-Antennenwahlschalter auf die "normal"-Stellung bringen.
3. Den Aussteuerungsprüfschalter ausschalten.
4. Den Eingangswähler auf die "FM"-Position stellen.
5. Die anderen Einstellungen entsprechen den AM (MW)-Einstellungen.

Nr.	FM (UKW) MESSENDER ANSCHLUSS	FM (UKW) MESSENDER FREQUENZ	ANZEIGE-FREQUENZ DURCH VOR-EINSTELLUNG	VORBEREITUNG	ABGLEICHSPUNKTE	ABGLEICHSVERFAHREN
	UKW-ZF-ABGLEICH					
6	–	Kein Signal	Kein Empfang	Ein Gleichstromröhren-voltmeter mit TP2 (beide Seiten von R111) über eine Drosselspule verbinden. (Siehe Abb. 2)	T102 (Diskriminator FT)	Den Kern von T102 so justieren, daß die gemessene Spannung im signallosen Modus 0V im 300mV Bereich beträgt.
	ÜBERLAGERUNGS-FREQUENZ-ABGLEICH					
7	–	Kein Signal	87.9MHz	Zwischen TP3 und Erdung Gleichstrom-Voltmeter schließen.	L6 (Osc. Spule)	L6 so justieren, daß die vom Gleichstrom-Voltmeter gemessene Spannung 4,1V beträgt.
	KRISTALLSCHWINGEREINSTELLUNG					
8	–	Kein Signal	87.9MHz	• Signal frequenzmesser an TP4 schließen. • Die Farbmarkierung der keramischen Filter (CF101 ~104) überprüfen). (Alle vier Filter haben die gleiche Farbe.)	CT901 (Kristallschwinger-trimmer)	Wenn blaue Keramikfilter benutzt werden, die Ausgangsfrequenz von TP4 auf 98.5751 MHz, bei rosa Filtern, die Frequenz auf 98.6251MHz und bei roten Filtern, die Frequenz auf 98.6001 MHz einstellen.
	UKW-HF-ABGLEICH					
9	–	Kein Signal	87.9MHz	Zwischen TP3 und Erdung Gleichstrom-Voltmeter schließen.	L6 (Osc. Spule)	L6 so justieren, daß die vom Gleichstrom-Voltmeter gemessene Spannung 4,1V beträgt.
10	Meßsender über eine Kunstantenne an den UKW-Antenneneingang schließen.	90.1MHz (400Hz Modulat., 100%)	90.1MHz	Oszilloskop an Ausgangsklemme (OUTPUT) Schließen.	L3 (HF Det. Spule 1) L4 (HF Det. Spule 2) L1 (Ant. Spule) T101 (IFT)	1. Einen schwachen Eingang geben, bei dem Geräusch in der Ausgangswellenform enthalten wird. 2. So einstellen, daß die Ausgangswellenform vertikal symmetrisch wird. (Abb. 3) 3. Die Einstellung von (9), (10) und (11) wiederhoten, bis die Frequenz mit der Skala übereinstimmt.
11		106.1MHz (400Hz Modulat., 100%)	106.1MHz	Oszilloskop an Ausgangsklemme (OUTPUT) Schließen.	CT1 (Osc. Trimmer)	
	ABGLEICH AUF MIN. VERZERRUNG IN STELLUNG UKW-MONO					
12	Meßsender über eine Kunstantenne an den UKW-Antenneneingang schließen	100.1MHz (400Hz Modulat., 100%)	100.1MHz	Verzerrungsmesser an rechten und linken Kanäle Ausgangsklemme "OUTPUT" des Gerätes schließen.	T103 (Diskriminator FT)	1. Den UKW Muting/UKW-Betriebsartschalter auf "on/auto" einstellen und dann Schritt (6) im signallosen Zustand prüfen. 2. Wenn Abweichung vorliegt (primäre Seite) von T102 wieder einstellen. 3. T103 (B) Kern für minimale Verzerrung der rechten und linken Kanäle justieren.
	UKW-STUMMABSTIMMUNGS PEGELANZEIGER					
13	Meßsender über eine Kunstantenne an den UKW-Antenneneingang schließen. (10dB in den Antenneneingang leiten.)	100.1MHz (400Hz Modulat., 100%)	100.1MHz	Oszilloskop oder Wechselstrom-Voltmeter an Ausgangsklemme (OUTPUT) Schließen.	VR101 (UKW-Muting)	1. Len UKW Muting/UKW-Betriebsartschalter auf "off/mono" einstellen. 2. "Muting" Schalter auf "on" stellen. VR101 so einstellen, daß der Ausgang unter Bewirken der Dämpfung gegeben wird.
	UKW-MPX-PILOTABGLEICH (VCO)					
14	Meßsender über eine Kunstantenne an den UKW-Antenneneingang schließen. (Mono-Signal)	100.1MHz (Unmodulierte Welle)	100.1MHz	Signal frequenzmesser an TP5 schließen.	VR301 (VCO)	1. Den UKW Muting/UKW-Betriebsartschalter auf "on/auto" einstellen. 2. VR301 so abgleichen, daß Ausgangsfrequenz von TP5 19kHz ± 30Hz
	KONTROLL - BANDPASSFILTER - ABGLEICH					
15	Meßsender über eine Kunstantenne an den UKW-Antenneneingang schließen. (Stereo-Pilotsignal 10% moduliert.)	100.1MHz (Unmodulierte Welle)	100.1MHz	Wechselstrom-voltmeter an TP6 schließen.	L302 L303 (Pilot BPF)	1. Den UKW Muting/UKW-Betriebsartschalter auf "on/auto" einstellen. 2. L302 und L303 so abstimmen, daß die Ausgangsspannung maximal ist.

Nr.	FM (UKW) MESSENDER		ANZEIGE-FREQUENZ DURCH VOR-EINSTELLUNG	VORBEREITUNG	ABGLEICHSPUNKTE	ABGLEICHSVERFAHREN
	ANSCHLUSS	FREQUENZ				
	KONTROLL - AUFLÖSEN - ABGLEICH					
16	Meßsender über eine Kunstantenne an den UKW-Antennen-eingang schließen. (Stereo-Pilotsignal 10% moduliert.)	100.1MHz (Un-modulierte Welle)	100.1MHz	Oszilloskop an TP7 schließen.	L302 VR303 (Kontrollauflösen)	1. Den UKW Muting/UKW-Betriebsartschalter auf "on/auto" einstellen. 2. L302 und VR303 abwechelnd so einstellen, daß die Ausgangsspannung am TP7 minimalisiert wird und die Wellenform wie in Abb. 4 erscheint.
	PHASENSCHIFTERABGLEICH					
17	Meßsender über eine Kunstantenne an den UKW-Antennen-eingang schließen. (Stereo-Pilotsignal 10% moduliert.)	100.1MHz (400Hz Modulat., 100%) L-Betriebsart	100.1MHz	Wechselstrom-voltmeter an L-Kanal Ausgangsklemme (OUTPUT) schließen.	VR302 (Phasenregelung)	1. Den UKW Muting/UKW-Betriebsartschalter auf "on/auto" einstellen. 2. VR302 so abstimmen, daß die Ausgangsleistung des linken Kanals maximal ist.
	STEREO-VERZERRUNGSABGLEICH					
18	Meßsender über eine Kunstantenne an den UKW-Antennen-eingang schließen. (Stereo-Pilotsignal 10% moduliert.)	100.1MHz (400Hz Modulat., 100%) L-Betriebsart	100.1MHz	Tiefpaßfilter (fc = 15 ~19kHz) über Wechselstrom-voltmeter an Ausg-angsklemme (OUT-PUT) des Gerätes schließen.	T101 (IFT)	1. Den UKW Muting/UKW-Betriebsartschalter auf "on/auto" einstellen. 2. Den schon eingestellten T101 erneut, innerhalb von ± 90° von der voreingestellten Kernposition einstellen, sodaß die Verzerrung des linken Kanals minimalisiert wird. 3. Die Schritte 6, 12 und 13 noch einmal überprüfen.
	TRENNUNG - ABGLEICH					
19	Meßsender über eine Kunstantenne an den UKW-Antennen-eingang schließen. (Stereo-Pilotsignal 10% moduliert.)	100.1MHz (400Hz Modulat., 100%) L- oder R-Betriebsart)	100.1MHz	Tiefpaßfilter (fc = 15 ~19kHz) über Wechselstrom-voltmeter an Ausg-angsklemme (OUT-PUT) des Gerätes schließen.	VR401	1. Den UKW Muting/UKW-Betriebsartschalter auf "on/auto" einstellen. 2. VR401 auf minimale Anzeige des R-Ausgangs bei Stereo-modulator in L-(L-Kanal-modulation) Modus, und auf minimale Anzeige des L-Ausgangs in R-Modus abgleichen.
	AUFNAHMEAUSSTEUERUNGS-CHECKSIGNALEINSTELLUNG					
20	Mebsender über eine Kunstantenne an den UKW-Antennen-eingang schließen. (Stereo-Pilotsignal 10% moduliert.)	100.1MHz (400Hz Modulat., 100%) L- und R-Betriebsart)	100.1MHz	Wechselstrom-voltmeter an Ausgangsklemme (OUTPUT) des Gerätes schließen.	VR402	1. So einstellen, daß die Ausgangsspannung auf 0dB kommt, wenn dem Gerät ein 60dB-Signal zugeleitet wird. 2. Den Aufnahmeaussteuerungsschalter auf "on" stellen. 3. VR402 so einstellen, daß der Ausgang auf -6dB kommt. L304 und L305 sind schon eingestellt. Deshalb den Kern nicht drehen.

■ INSTRUCTIONS DE REGLAGE — FRANCAIS

*** Dans le cas d'un appareil sans sélecteur FM/AM, l'émission peut être recue sur FM 50 kHz/AM 9 kHz.**
*** Quand l'appareil présente un sélecteur FM/AM, placer le commutateur sur l'étape de FM 50kHz/AM 9kHz.**

REGLAGE DE AM

• Réglage et équipement utilisé
1. Voltmètres électronique de courant alternatif et de courant continu (VTVM)
2. Générateur du signal AM (AM-SG)
3. Placer le sélecteur de mode de programme sur la position "manual".
4. Conservel la tension du secteur à la tension nominale.
5. Le signal du générateur ne doit pas étre plus élevé qu'il n'est nécessaire à obtenir une lecture en sortie.
6. Régler la position de la bobine (L201) de l'antenne en utilisant un tournevis de telle sorte qu'alle soit environ à 25 degrés de la plaque arriére.
7. Sélecteur d'entrée sur la position "AM"
8. Utiliser un tournevis non-métallique pour le réglage.
9. Régler le commutateur de réglage silencieux de AM sur la position "off".

	AM GENERATEUR		FREQUENCE D'AFFICHAGE PAR PREREGLAGE	PREPARATIONS	ELEMENTS REGLES	PROCEDURE DE REGLAGE
	BRANCHEMENT	FREQUENCE				
	REGLAGE DE FI-AM					
No. 1	Brancher le AM-SG à la borne de l'antenne AM par un condensateur de 200pF. Commun au châssis. (Entrée sous puissante)	450kHz (modulé à 30% par 400Hz)	Point sans signal	Brancher le voltmètre à courant alternatif et l'oscilloscope aux borne de sortie (OUTPUT) de l'appareil.	L203 (1 transfo FI) Z201 (2 transfo FI)	Régler la fréquence d'entrée et les points de réglage de telle sorte que la sortie devienne maximale.
	REGLAGE DE RF-AM					
2	Brancher le AM-SG à la borne de l'antenne AM par un condensateur de 200pF. Commun au châssis. (Entrée faible)	522kHz (modulé à 30% par 400Hz)	522kHz	Brancher le voltmètre à courant continu entre TP1 et la prise de terre.	L202 (Bobine OSC)	Régler L202 de telle sorte que le voltage mesuré par le voltmètre à courant continu, soít de 1.0 ± 0.05 V.
3		612kHz (modulé à 30% par 400Hz)	612kHz	Brancher le voltmètre à courant alternatif et l'oscilloscope aux borne de sortie (OUTPUT) de l'appareil.	L201 (Bobine Ant.)	1. Régler au maximum de signal de sortie. 2. Régler le noyau ferrite de L201 à l'aide d'un tournevis.
4		1503kHz (modulé à 30% par 400Hz)	1503kHz	Brancher le voltmètre à courant alternatif et l'oscilloscope aux borne de sortie (OUTPUT) de l'appareil.	CT201 (Trimmer Ant.)	1. Régler au maximum de signal de sortie. 2. Refaire les étapes (3) et (4) jusqu'à ce que le fréquence s'aligne correctement avec l'affichage du cadran.
	REGLAGE DU REGLAGE SILENCIEUX AM					
5	Brancher le AM-SG à la borne de l'antenne AM par un condensateur de 200pF. Commun au châssis. (Appliquer environ 35dB à la borne de l'antenne.)	1503kHz (modulé à 30% par 400Hz)	1503kHz	Brancher le voltmètre à courant alternatif et l'oscilloscope aux borne de sortie (OUTPUT) de l'appareil.	VR601	Avec le commutateur de silencieux AM réglé sur la position "on", régler le VR601 de telle sorte que la sortie fournie avec le réglage silencieux en position déclenchée.

REGLAGE DE FM

• Equipment utilisé
1. Générateur du signal FM (FM-SG)
2. Commande de réglage stéréophonique (ou vu-mètre de séparation).
3. Jauge de distorsion.
4. Oscilloscope.
5. Voltmètres électronique de courant alternatif et de courant continu (VTVM).
6. Compteur de fréquence (19kHz et 108MHz mesurable).
7. Antenne fictive FM, 75 ohms (Fig. 1) et filtre passe-bas (fc = 15 ~ 19kHz)

• Préparation du générateur de signal FM (FM-SG)
1. Brancher la commande de réglage stéréophonique à FM-SG.
2. Alimenter la sortie SG à la borne de l'antenne de l'appareil, par l'antenne fictive FM, 75 ohms.
3. L'entrée standard de l'appareil est de 60dB (1mV), 400Hz, 100% de modulation (à cause de l'utilisation de l'antenne fictive, la sortie SG doit être de plus 12dB (IHF). Ce qui signifie que quand l'entrée est de 60dB, la sortie SG doit être de 72dB.)

• Conditions de l'appareil
1. Placer le commutateur de réglage silencieux de FM sur la position "off".
2. Placer le sélecteur de l'antenne FM sur la position "normal".
3. Placer le commutateur de vérification du niveau d'enregistrement sur la position "off".
4. Sélecteur d'entrée sur la position "FM"
5. Les autres réglages sont les mêmes que les réglages de AM.

No.	FM GENERATEUR		FREQUENCE D'AFFICHAGE PAR PREREGLAGE	PREPARATIONS	ELEMENTS REGLES	PROCEDURE DE REGLAGE
	BRANCHEMENT	FREQUENCE				
	REGLAGE DE FI-FM					
6	–	Sans Signal	Point sans signal	Brancher le VTVM CC à TP2 (des deux côtés de R111), par la bobine d'arrêt. (Voir la Fig. 2)	T102 (Transfo FI discri.)	Régler le noyau T102 de telle sorte que le voltage mesuré dans le mode sans signal, soti de 0V dans la gamme des 300mV.
	REGLAGE DU FRÉQUENCE D'OSCILLATION LOCAL					
7	–	Sans Signal	87.9MHz	Brancher le voltmètre à courant continu entre TP3 et la prise de terre.	L6 (Bobin Osc.)	Régler L6 de telle sorte que le voltage mesuré par le voltmètre à courant continu soit de 4,1V.
	REGLAGE DE L'OSCILLATEUR A CRISTAL					
8	–	Sans Signal	87.9MHz	• Brancher le compteur de fréquence entre TP4 et la prise de terre. • Vérifier la couleur de filtres céramiques (CF101 à CF104) (Les quatre filtres sont de la même couleur).	CT901 (Trimmer de l'osc à cristal)	Quand un filtre céramique marqué en bleu est utilisé, régler la fréquence de sortie de sortie de TP4 à 98,5751 MHz. Régler aussi la fréquence des filtres oranges à 98,6251 MHz et des filtres rouges à 98,6001 MHz.
	REGLAGE DE RF-FM					
9	–	Sans Signal	87.9MHz	Brancher le voltmètre à courant continu entre TP3 et la prise de terre.	L6 (Bobin Osc.)	Régler L6 de telle sorte que le voltage mesuré par le voltmètre à courant continu soit de 4,1V.
10	Branchez sur la prise d'antenne FM à traves une antenne fictive FM	90.1MHz (modulé à 100% par 400Hz)	90.1MHz	Brancher le voltmètre à courant alternatif et l'oscilloscope aux borne de sortie (OUTPUT) de l'appareil.	L3 (1er détecteur) L4 (2e détecteur) L1 (Bobin Ant.) T101 (Transfo FI)	1. Appliquer une entrée faible de telle sorte que le parasite soit compris dans la forme de l'onde de sortie. 2. Faire le réglage de telle sorte que la forme de l'onde de sortie soit verticalement symétrique. (Voir fig. 3) 3. Refaire les réglages (9), (10) et (11) jusqu'à ce que la fréquence corresponde correctement avec l'échells du cadran.
11		106.1MHz (modulé à 100% par 400Hz)	106.1MHz	Brancher le voltmètre à courant alternatif et l'oscilloscope aux borne de sortie (OUTPUT) de l'appareil.	CT1 (Trimmer Osc.)	
	REGLAGE DE LA DISTORSION FM EN MONO					
12	Branchez sur la prise d'antenne FM à travers une antenne fictive FM.	100.10MHz (modulé à 100% par 400Hz)	100.10MHz	Brancher le compteur de distorsion à la borne de sortie (OUTPUT) du canal gauche et droit de l'appareil.	T103 (Transfo FI discri.)	1. Placer le commutateur de réglage silencieux de FM/ mode de FM sur la position "on/auto" et vérifier l'étape (6) dans le mode sans signal. 2. S'il est déplacé, re-fégler (côté primaire) de T102. 3. Régler le noyou T103 de telle sorte que la distorsion des canaux droit et gauche soit la plus faible.
	REGLAGE DU SEUIL DU SILENCIEUX D'ACCORD					
13	Branchez sur la prise d'antenne FM à travers une antenne fictive FM. (Appliquer 10dB à la borne de l'antenne.)	100.1MHz (modulé à 100% par 400Hz)	100.1MHz	Brancher le voltmètre à courant alternatif et l'oscilloscope aux borne de sortie (OUTPUT) de l'appareil.	VR101	1. Placer le commutateur de réglage silencieux de FM/ mode FM sur "off/mono". 2. Avec le commutateur de mode/réglage silencieux FM réglé sur la position "on/auto", régler le VR101 de telle sorte que la sortie fournie avec le réglage silencieux en position déclenchée.
	REGLAGE (VCO) PILOTE MULTIPLEX FM					
14	Branchez sur la prise d'antenne FM à travers une antenne fictive FM. (Signal monoscoustique)	100.1MHz Non modulé	100.1MHz	Brancher le compteur de fréquence à TP5.	VR301	1. Placer le commutateur de réglage silencieux de FM/ mode FM sur "on/auto". 2. Régler VR301 de telle sorte que la fréquence de sortie de TP5 soit de 19kHz ± 30Hz.

No.	FM GENERATEUR		FREQUENCE D'AFFICHAGE PAR PREREGLAGE	PREPARATIONS	ELEMENTS REGLES	PROCEDURE DE REGLAGE
	BRANCHEMENT	FREQUENCE				
	REGLAGE FILTRE PILOTE PASSE - BANDE					
15	Branchez sur la prise d'antenne FM à travers une antenne fictive FM. (Signal stéréo pilote à 10% de modulation)	100.1MHz (Non module)	100.1MHz	Brancher un voltmètre à courant alternatif à TP6 .	L302 L303 (BPF signal pilote)	1. Placer le commutateur de réglage silencieux de FM/ mode FM sur "on/auto". 2. Régler la L302 et al L303 de telle sorte que la tension de sortie soit maximale.
	ANNULATION DU SIGNAL PILOTE					
16	Branchez sur la prise d'antenne FM à travers une antenne fictive FM. (Signal stéréo pilote à 10% de modulation)	100.1MHz (Non module)	100.1MHz	Brancher le voltmètre à courant alternatif et l'oscilloscope à TP7 .	L302 VR303	1. Placer le commutateur de réglage silencieux de FM/ mode FM sur "on/auto". 2. Régler les L302 et VR303 alternativement de telle sorte que la tension de sortie du TP7 soit minimale et que la forme d'ondes soit celle montrée sur la Fig. 4.
	REGLAGE DU DEPHASEUR					
17	Branchez sur la prise d'antenne FM à travers une antenne fictive FM. (Signal stéréo pilote à 10% de modulation)	100.1MHz (modulé à 100% par 400Hz) (Mode G)	100.1MHz	Brancher un voltmètre à courant continu à la borne de sortie du canal gauche.	VR302	1. Placer le commutateur de réglage silencieux de FM/ mode FM sur "on/auto". 2. Régler la VR302 de telle sorte que la sortie du canal gauche, soit maximale.
	REGLAGE DE LA DISTORSION STEREO					
18	Branchez sur la prise d'antenne FM à travers une antenne fictive FM. (Signal stéréo pilote à 10% de modulation)	100.1MHz (modulé à 100% par 400Hz) (Mode G)	100.1MHz	Brancher le filter passe-bas (fc = 15 ~ 19kHz) à la borne de sortie (OUTPUT) de l'appareil par un voltmètre à courant alternatif.	T101	1. Placer le commutateur de réglage silencieux de FM/ mode FM sur "on/auto". 2. Rerégler le T101 déjà réglé, à ± 90% de la position préréglée du noyau de telle sorte que la distorsion du canal gauche soit minimale. 3. Revérifier les étapes 6, 12 et 13.
	REGLAGE DE LA SEPARATION DES CANAUX					
19	Branchez sur la prise d'antenne FM à travers une antenne fictive FM. (Signal stéréo pilote à 10% de modulation)	100.1MHz (modulé à 100% par 400Hz) (Mode G ou D.)	100.1MHz	Brancher le filter passe-bas (fc = 15 ~ 19kHz) à la borne de sortie (OUTPUT) de l'appareil par un voltmètre à courant alternatif.	VR401	1. Placer le commutateur de réglage silencieux de FM/ mode FM sur "on/auto". 2. Régler VR401 de telle sorte que la sortie droite soit minimale quand la commande d'accord stéréophonique est dans le mode gauche (modulation du canal gauche) et que la sortie gauche soit minimale dans mode droit.
	REGLAGE DU SIGNAL DE VERIFICATION DU NIVEAU D'ENREGISTREMENT					
20	Branchez sur la prise d'antenne FM à travers une antenne fictive FM. (Signal stéréo pilote à 10% de modulation)	100.1MHz (modulé à 100% par 400Hz) (Mode G+D)	100.1MHz	Brancher le voltmètre à courant alternatif et l'oscilloscope aux borne de sortie (OUTPUT) de l'appareil.	VR402	1. Régler de telle sorte que la tension de sortie soit de 0dB quand un signal de 60dB est appliqué à l'appareil. 2. Régler le commutateur de niveau d'enregistrement sur "on". 3. Régler la VR402 de telle sorte que la sortie soit de -6dB.

■ DISASSEMBLY INSTRUCTIONS

• How to check printed circuit board

1. Remove the 3 setscrews (① ~ ③ in Fig. 5) on the bottom of the set
   (Do not loosen the pin (Ⓐ in Fig. 5.)
2. Remove the 4 setscrews (④ ~ ⑦ in Fig. 6) of the cabinet.
3. Remove the 3 setscrews (⑧ ~ ⑩ in Fig. 6) on both sides of the front panel; 4 setscrews (⑪ ~ ⑭ in Fig. 6) on the rear panel.
4. Raise the set as in Fig. 7. Cut off the lead clamper and open the chassis and printed circuit board to the right and left.
   (Ground wire is connected to the pin Ⓐ in Fig. 5 as shown in Fig. 8 Ⓑ. If it is hard to open the chassis, remove the ground wire connected to the pin.)
5. When crystal oscillator (X901) has been replaced, solder IC902 shield cover to the crystal case as shown in Fig. 8 in order to prevent noise.

Note: For ⑪ and ⑫ in Fig. 6, screw (XTB3+8BFZ1) provided with pin like **A** encircled by dotted line is used. However, to replace them, use 3x8mm tapping screw (XTB3+8BFZ) and toothed lock washer (XWC3B) like **B**.

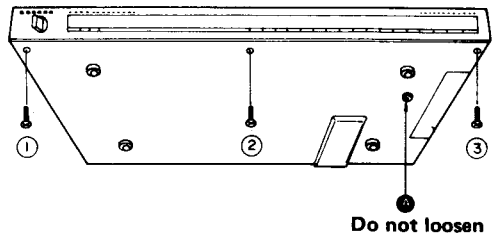


Fig. 5

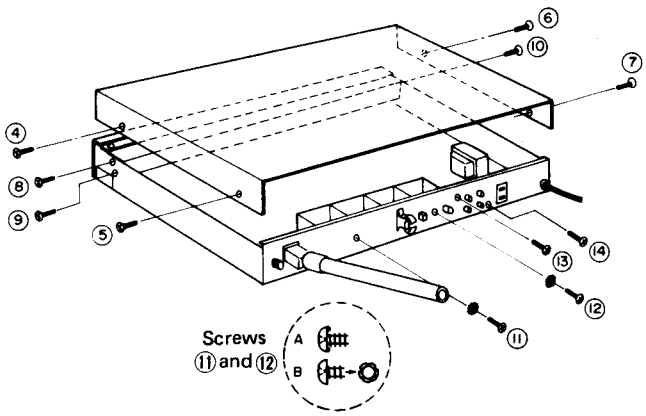


Fig. 6

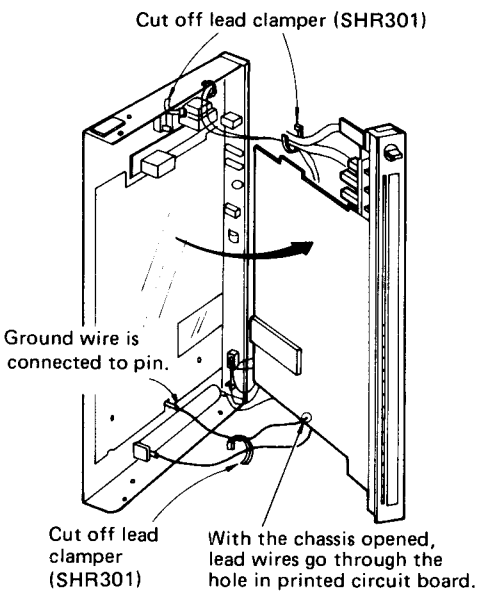

Cut off lead clamper (SHR301)
Ground wire is connected to pin.
Cut off lead clamper (SHR301)
With the chassis opened, lead wires go through the hole in printed circuit board.

Fig. 7

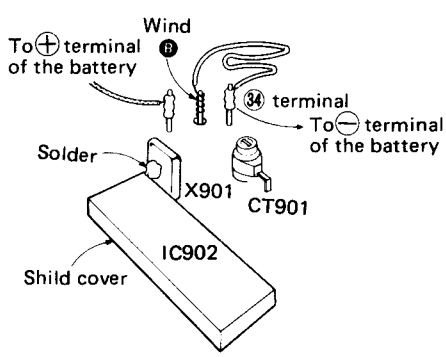


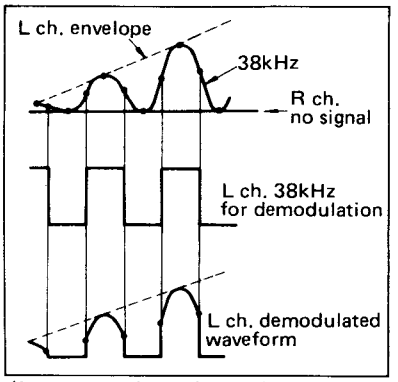
Fig. 8

- **Peak sampling hold circuit**

The pilot signal which has passed through the 19kHz cancel circuit is applied to the phase shift circuit in the form of clear sine waves and then goes into IC of PLL. Thus, 38kHz square waves for L and R channels, which are 180° different in phase from each other, can be obtained as the output. In a conventional switching system, this signal was used to separate the composite signal into L and R.

In the present system, the square waves are passed through the differential circuit, and the output signal is used for switching of the composite signal.

To explain this in further detail, suppose to modulate a composite signal which exists only on L channel while no signal on R channel for the convenience of explanation, then in a conventional system, the L channel modulating signal comes to the center of the envelope (peak points) of the composite signal switched at 38kHz as shown in Fig. 9, and the L signal is thus modulated.



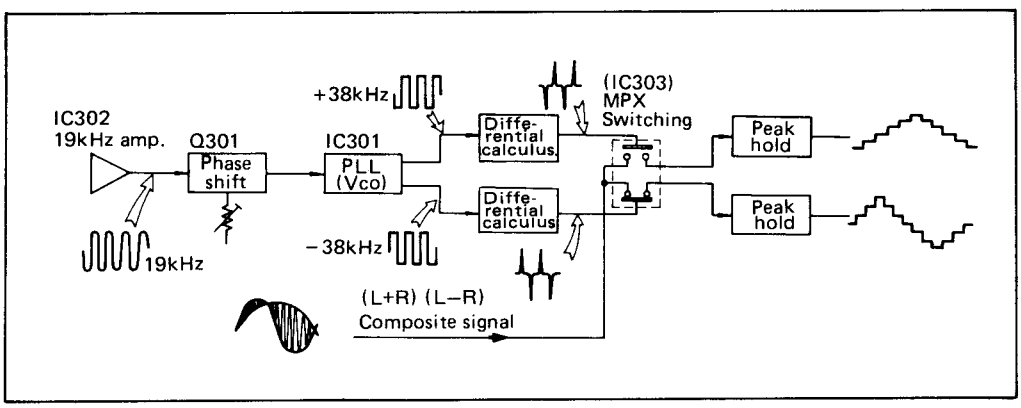
(L channel demodulated waveform in conventional system)

Fig. 9

However, the L signal leaks into R channel due to the R channel modulating signal as shown in Fig. 11. This causes worsening of separation.

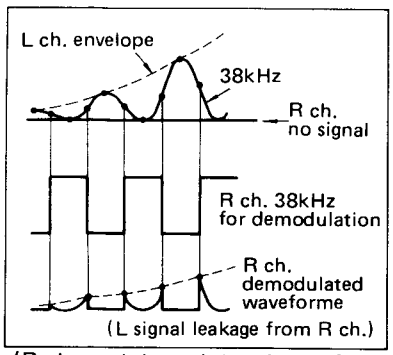
In the peak sampling system, as shown in Fig. 12, the phase shift circuit serves to correct the modulating signal so that the rise part of the signal comes to the envelope (peak points) and then the signal goes into the differential circuit. The signal is modulated (sampled) by the signal thus obtained. The modulated L and R signals, maintaining the output level, are applied into the AF amplifier through the peak hold circuit to increase the signal to noise ratio. As shown in Fig. 13, there is almost no leakage of L signal into R channel due to the modulating signal of R channel, unlike the case of Fig. 11, and the resultant separation is sufficent.

The peak sampling hold system is compared with the conventional system in Fig. 14.



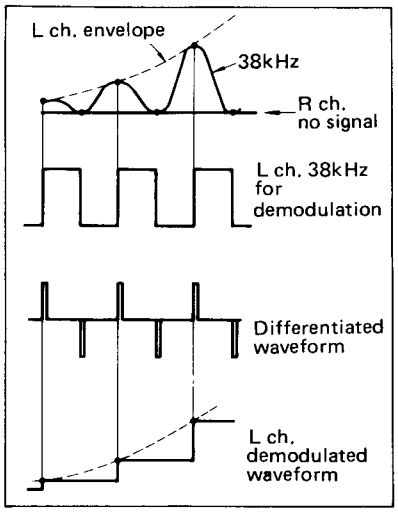
(Peak sampling hold MPX circuit block diagram)

Fig. 10



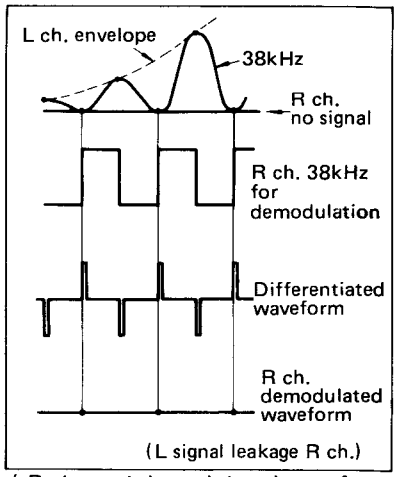
(R channel demodulated waveform in conventional system)

Fig. 11



(L channel demodulated waveform in the peak sampling)

Fig.12



(R channel demodulated waveform in the peak sampling)

Fig. 13

- **Comparison of conventional MPX and peak sampling MPX systems**

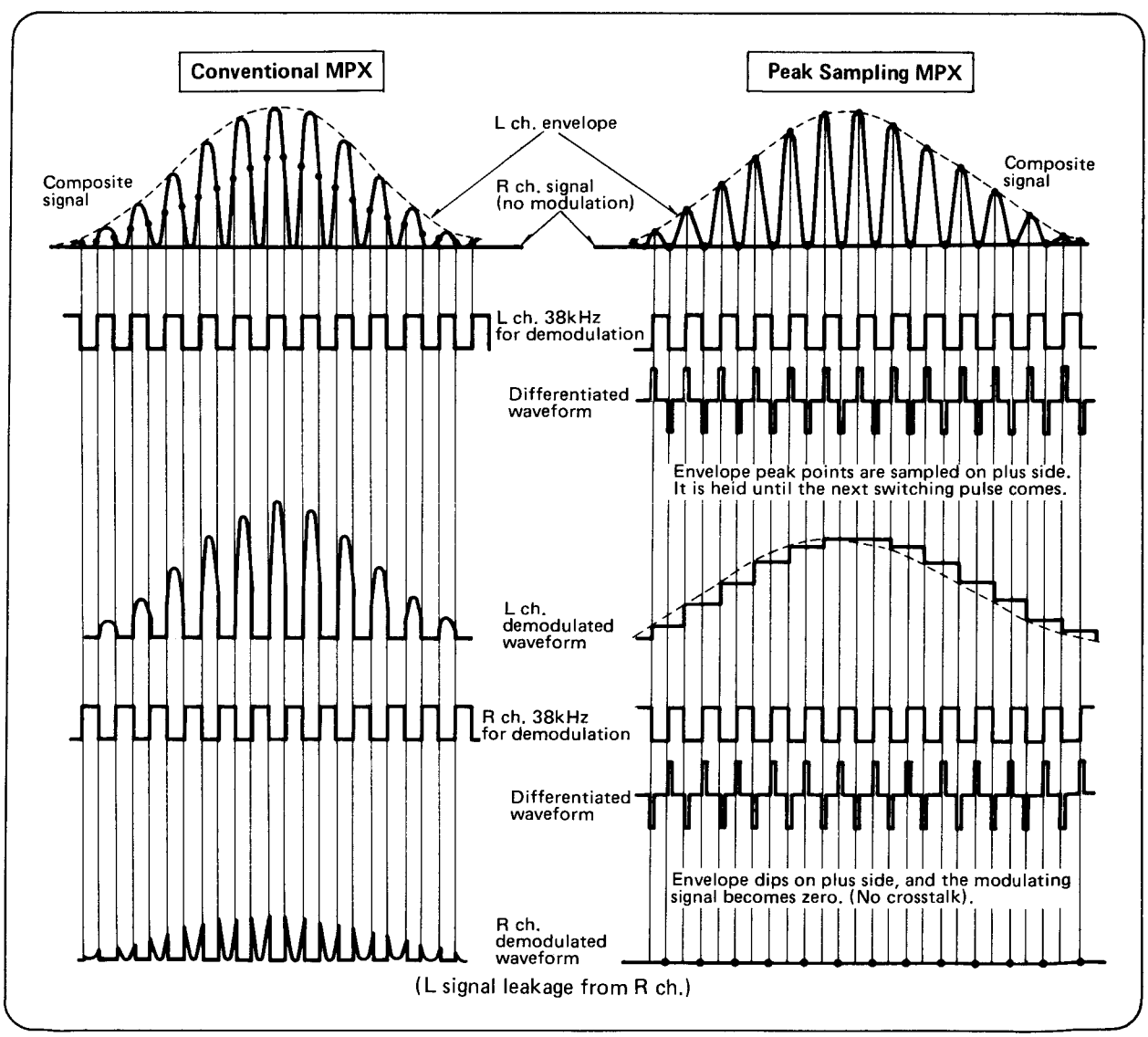


Fig. 14

■ REPLACEMENT PARTS LIST ····· Electric Parts

Notes: 1. ⚠ indicates that only parts specified by the manufacturer be used for safety.
2. Bracketed indications in Ref. No. columns specify the area. Parts without these indications can be used for all areas.

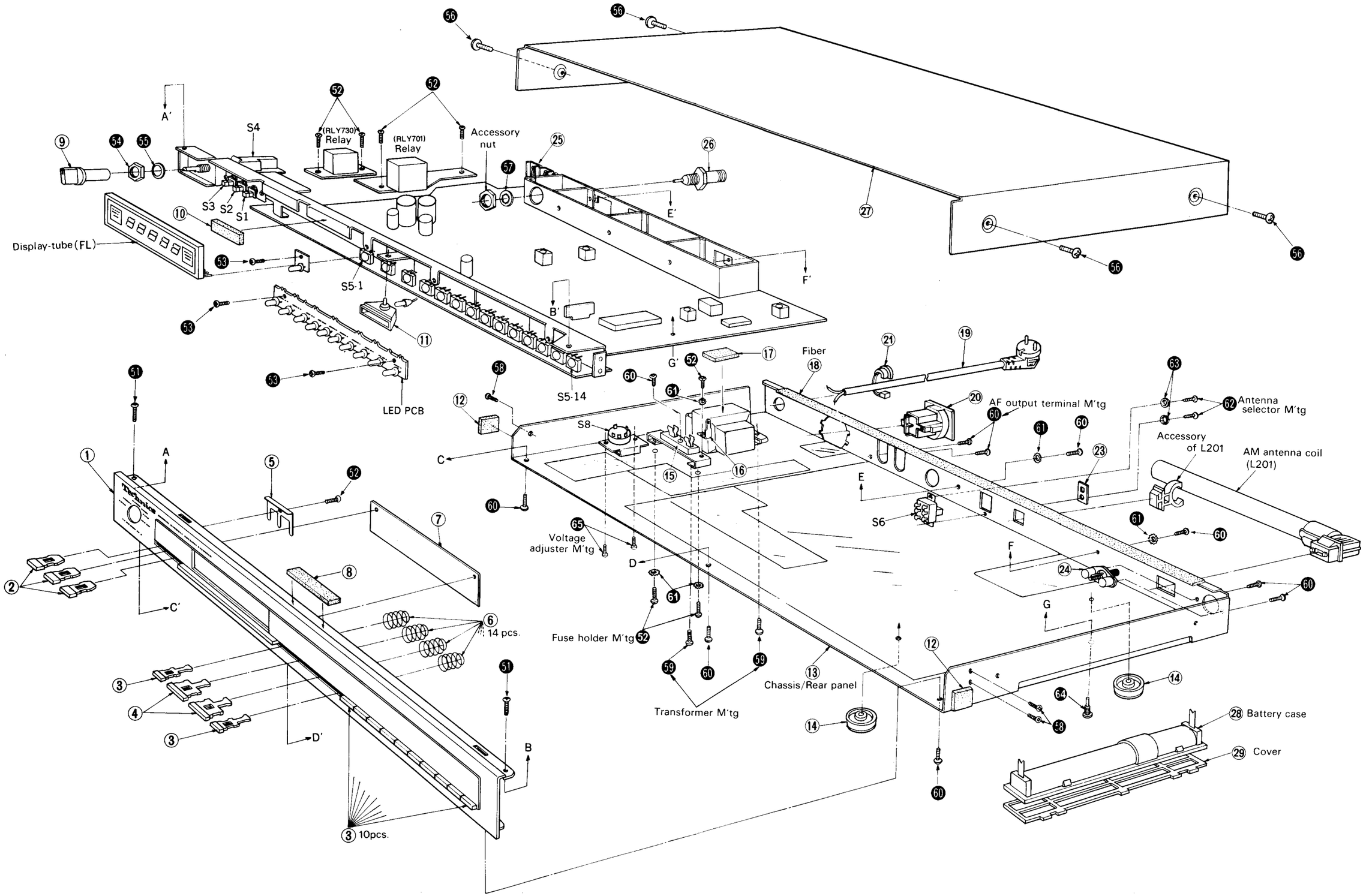
Areas

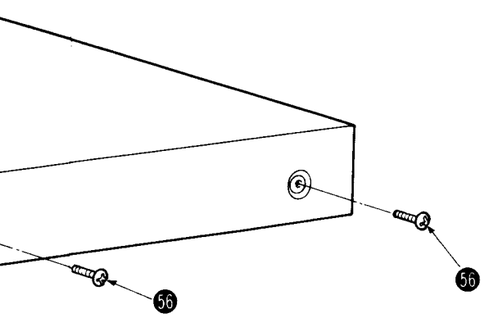
[XE] is available in United Kingdom.
[XA] is available in Asia, Latin America, Middle East and Africa.

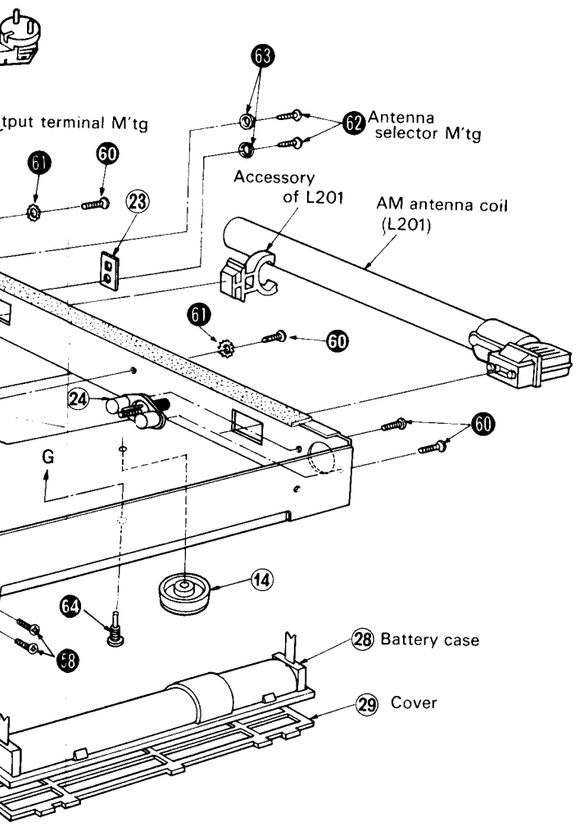
Ref. No.		Part No.	Part Name & Description
INTEGRATED CIRCUITS			
IC101		SVIAUPC577HF	IC, FM-IF Amplifier
IC102		SVIUPC1161C	IC, FM-IF Amplifier & Detector
IC201		AN217P–BB	IC, AM Converter
IC301		SVIUPC1161C	IC, FM MPX
IC302, 401		AN6552F	IC, 19kHz & AF Amplifier
IC303		SVIUPD4066C	IC, MPX Peak Sampling Circuit
IC901		SVIUPB553C–E	IC, Pre-Scaler
IC902		SVIUPD1704CL	IC, Micro-Conputer
IC903		SVITC5067BP	IC, Buffer (Fluorescence Driver)
IC904		SVIM74LS42P	IC, Decoder
TRANSISTORS			
Q1		3SK74–L1	Transistor, FM-RF Amplifier [FET]
Q2		2SC1674–M	Transistor, FM Mixer
Q3, 4, 5		2SC1675–L1	Transistor, Buffer & Oscillator (Use in ranks L1 or L2)
Q201, 202, 301, 302, 401, 402		2SC945–P2	Transistor, Buffer, Phase Shift, Muting & AF Amp. (Use in ranks P1 or P2)
Q404, 405, 601, 602, 604, 605, 606, 608, 609, 702, 704, 705, 709, 710		2SC945–P2	Transistor, Recording Level Check Signal Generator & Switching (Use in ranks P1 or P2)
Q901~908		2SC945–P2	Transistor, Loop Filter & Driver (Use in ranks P1 or P2)
Q403, 603, 607, 701, 707, 708, 909~911		2SA733–P1	Transistor, Muting, Relay Driver & Switching. (Use in ranks P1 or P2)
Q703		2SD571–L	Transistor, Voltage Regulator
Q706		2SD762–O	Transistor, Voltage Regulator (Use in ranks O or P)
Q981, 982		2SC1684–R	Transistor, Reset Circuit (Use in ranks R or T)
Q961 [XA] only		2SC945–P2	Transistor, Switching (Use in ranks P1 or P2)
DIODES			
D1~4		SVDBB204	Diode, Variable Capacitance (for FM)
D201		SVDBB113	Diode, Variable Capacitance (for AM)
D202, 303		**RVDKB262C**	Diode, AM Detector & Muting
D203, 204, 301, 601~609, 611~613, 616, 620, 621, 650, 705, 901~913, 916~921, 934, 935, 982		**MA162A**	Diode, Switching
D936 Except for [XA]		**MA162A**	Diode
D302, 933		**2OA90**	Diode, Switching
D701~704	⚠	**SVDSR1K2**	Rectifier
D706		SVDMZ330A2	Diode, 30V Zener
D707		**RVDRD6R2EB**	Diode, 6.2V Zener
D708		MA1064A	Diode, 6.4V Zener
D709		SVDMZ312C2	Diode, 12V Zener
D710		SVDMZ333A	Diode, 33V Zener
D922~932		LN21CP	Light Emitting Diode, Channel Indicator
D981		SVDMZ303A	Diode, 3V Zener
D961 [XA] only		**MA162A**	Diode
COILS			
L1		SLA4P43	Coil, FM Antenna
L2, 7		**SLQAN40G–1**	Coil, Choke
L3		SLD4P43	Coil, FM-RF Detector
L4		SLD4P45	Coil, FM-RF Detector
L5		RLQY15G5–Y	Coil, Choke
L6		SLO4P73	Coil, FM Oscillator
L101		SLQW270–1K	Coil, Choke
L201		SLF2D59	Coil, AM Bar Antenna
L202		SLO2C25–P	Coil, AM Oscillator
L203		SLI2C127	Coil, AM IF
L204, 301		SLQX101–2D	Coil, Choke
L302, 303		SLM1C57–Z	Coil, 19kHz Filter (Old part No. SLM1C37–Z)
L304		SLM1C47–P	Coil, Low Pass Filter

Ref. No.		Part No.	Part Name & Description
TRANSFORMERS			
T101		SLI4C109	Transformer, FM-IF
T102		SLI4C511–K	Transformer, FM Discriminator IF
T103		SLI4C513–K	Transformer, FM Discriminator IF
T701	⚠	SLT5J121–W	Transformer, Power
CERAMIC FILTERS			
CF101		SVFE107MX2–A	Ceramic Filter, 10.7MHz (Red)
		SVFE107MX2–B	Ceramic Filter, 10.675MHz (Blue)
		SVFE107MX2–C	Ceramic Filter, 10.725MHz (Orange)
CF102, 103, 104		SVFE107MM–A	Ceramic Filter, 10.7MHz (Red)
		SVFE107MM–B	Ceramic Filter, 10.675MHz (Blue)
		SVFE107MM–C	Ceramic Filter, 10.725MHz (Orange) (Use pair ranks as same as CF101, CF102, CF103 and CF104)
CF201		SVFSFP450HT	Ceramic Filter, AM 450kHz
CRYSTAL			
X901		SVQ43U452–1	Crystal, 4.5MHz Counter Oscillator
VARIABLE RESISTORS			
VR101		**EVTS3MA00B53**	Muting Level Adjustment, 5kΩ (B)
VR301		**EVTS3MA00B14**	PLL IC (VCO) Adjustment, 10kΩ (B)
VR302		**EVTS3MA00B53**	Phase Shifter Adjustment, 5kΩ (B)
VR303		**EVTS3MA00B54**	Pilot Signal Cancel Adjustment, 50kΩ (B)
VR401		**EVTS3MA00B15**	Separation Adjustment, 100kΩ (B)
VR402		**EVTS3MA00B55**	Recording Level Check Adjustment, 500kΩ (B)
VR601		**EVTS3MA00B15**	AM Muting Adjustment, 100kΩ (B)
VARIABLE CAPACITORS			
CT1, 901		ECV1ZW06X32E	FM Local Osc. & Counter Osc. Adjustment
CT201		SVCTY121B269	AM Antenna Trimmer
COMPONENT COMBINATIONS			
Z201		SLI9F101–Z	Component Combination, AM Detector Circuit
Z701, 702		EXRFS203ZS	Component Combination, 0.01μF (x2)
Z901, 902		EXBP87104K	Component Combination, 100kΩ (x7)
THERMISTER			
TH101		ERTD2FHL103S	Thermister, Thermal Compensation, 10kΩ
LAMP			
PL601	⚠	**XAMR38S200B**	Lamp, Quartz Lock Indicator, 6.3V 45mA
FUSES			
F1 [XA,XE] only	⚠	XBA2C10TRO	Fuse, T1A (250V)
F1 [Other Areas]	⚠	XBA2C08TRO	Fuse, T800mA (250V)
SWITCHES			
S1, 2, 3		SSH373	Switch, FM Mode, Rec Level & Clock Call
S4		SSR93	Switch, Program Mode
S5–1~5–14		SSG3	Switch, Preset Key
S6		ESD14116	Switch, FM Antenna Selector
S7 [XA] only		ESD14116	Switch, FM/AM Allocation Selector
S8	⚠	ESE372	Switch, Voltage Adjuster
S9 [XE] only	⚠	ESB70133	Switch, Power Source
FLUORESCENT DISPLAY TUBE			
FL		SAD7MT09ZA	Fluorescent Display Tube
RELAY			
RLY701 [XA] only	⚠	SSY77	Relay, AC Outlet
RLY701 [Other Areas]	⚠	SSY81	Relay, AC Outlet
RLY730 Except for [XA & XE]	⚠	SSY81	Relay, AC Outlet

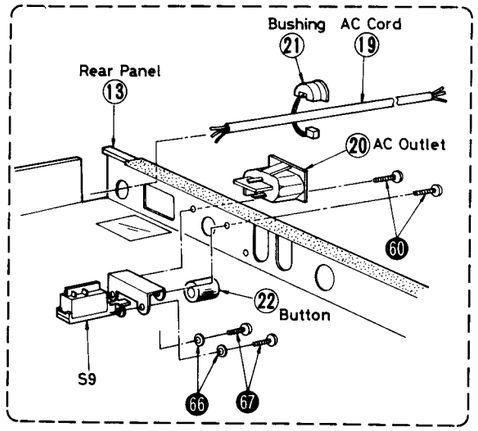
■ EXPLODED VIEWS



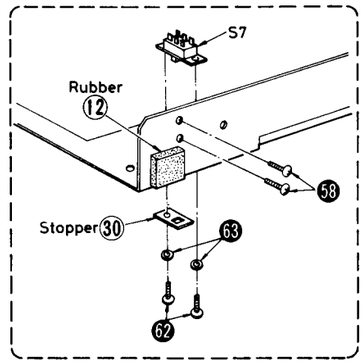




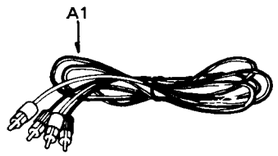
● Exploded view of rear panel for United Kingdom ([XE] area)

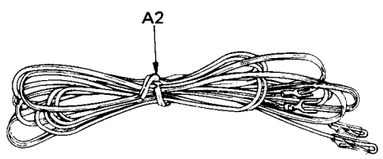


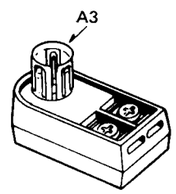
● Exploded view of left chassis side for Asia, Latin America, Middle East and Africa ([XA] area)

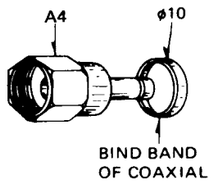


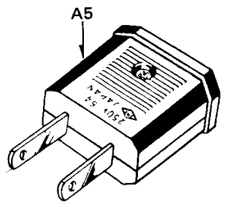
● Accessories











■ REPLACEMENT PARTS LIST ····· Cabinet an

Notes:

1. Part numbers are indicated on most mechanical parts. Please use this part number for parts orders.
2. ⚠ indicates that only parts specified by the manufacturer be used for safety.
3. K -marked parts are used for black type only, while O -marked parts are for silver type only.
4. Parts other th and silver type
5. Bracketed ind Parts without

Bla

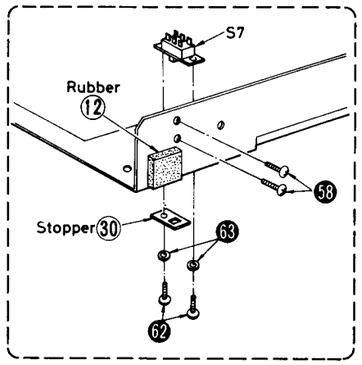
Ref. No.		Part No.	Part Name & Description
CABINET and CHASSIS PARTS			
1	O	SYWTS7M	Panel, Front Ass'y
1	K	SYWTS7KD	Panel, Front Ass'y (Black)
2	O	SBC239	Button, Clock Call/Rec Level/Muting
2	K	SBC239–1	Button, Clock Call/Rec Level/Muting (Black)
3	O	SBC235	Button, Memory & Preset
3	K	SBC235–1	Button, Memory & Preset (Black)
4	O	SBC237	Button, Tuning
4	K	SBC237–1	Button, Tuning (Black)
5		SUS167	Spring, Clock Call/Rec Level/Muting Buttons
6		SUS171	Spring, Preset Buttons
7		SHR5047–1	Filter, Display Window
8		SHG6063	Rubber Magnet, Front Panel
9	O	SBN867	Knob, Program Mode
9	K	SBN867–1	Knob, Program Mode (Black)
10		SHGA629	Cushion, FL Display Tube (Rubber)
11		SHG1483	Bracket, Quartz Lock Lamp
12		SHG6051–1	Cushion, Chassis Side (Rubber)
13 [DX] only		SGPTS7DX	Rear Panel, With Chassis & Feet Ass'y
13 [DM] only		SGPTS7DM	Rear Panel, With Chassis & Feet Ass'y
13 [XSW] only		SGPTS7W	Rear Panel, With Chassis & Feet Ass'y
13 [XE] only		SGPTS7E	Rear Panel, With Chassis & Feet Ass'y
13 [XA] only		SGPTS7X	Rear Panel, With Chassis & Feet Ass'y
13 [DG,XGH, EB,XGF]		SGPTS7K	Rear Panel, SGPTS7DX with Name Plate SGT21410)
14		SKL227	Foot, Set Bottom Side
15		**SJFA5101**	Holder, Fuse
16		SJT503	Terminal, Ground (1 pin)
17		SHG647	Cushion, Power Transformer (Rubber)
18		SHS1009	Fiber, Rear Panel
19 [DM] only	⚠	**SJA97**	AC Cord, Power Source (With Plug)
19 [XSW] only	⚠	SJA119	AC Cord, Power Source (With Plug)
19 [XE] only	⚠	**QFC1206M**	AC Cord, Power Source
19 [DG] only	⚠	SJA103–2	AC Cord, Power Source (With Plug)
19 [DX,XGH XGF,EB,XA]	⚠	SJA103–1	AC Cord, Power Source (With Plug)
20 [DM] only	⚠	SJS9311	Socket, AC Outlet
20 [XSW] only	⚠	SJS9307	Socket, AC Outlet
20 [XE] only	⚠	SJS9303	Socket, AC Outlet
20 [XA] only	⚠	SJSA66–2	Socket, AC Outlet
20 [DX,DG,EB, XGH,XGF]	⚠	SJS9309	Socket, AC Outlet
21 [DM] only		SFSR4N4	Bushing, AC Cord
21 [Other Areas]		SHR131	Bushing, AC Cord
22 [XE] only		SBC159	Button, Power Switch (S9)
23		SHR5073–1	Stopper, FM Antenna Selector

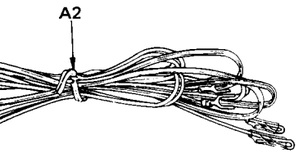
Ref. No.	
24	
25	
26	
27	O
27	K
28	
29	
30 [XA] only	
SCREWS, NUTS an	
51	
52	
53	
54	
55	
56	O
56	K
57	
58	
59	
60	
61	
62	
63	
64	
65	
66 [XE] only	
67 [XE] only	
ACCESSORIES	
A1	
A2	
A3	
A4	
A5 [XA] only	
PACKING PARTS	
P1	
P2	
P3	
P4 [XGF] only	
P4 [Other Areas]	
P5 [XE] only	
P5 [XA] only	
P5 [Other Areas]	

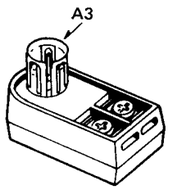
Area

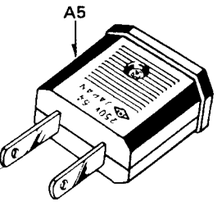
* [D
* [D
Bel
Fra
* [D
* [E
* [X
* [X
* [X
* [X
* [X
and

- Exploded view of left chassis side for Asia, Latin America, Middle East and Africa ([XA] area)









■ REPLACEMENT PARTS LIST ····· Cabinet and Chassis Parts

Notes:

1. Part numbers are indicated on most mechanical parts. Please use this part number for parts orders.
2. ⚠ indicates that only parts specified by the manufacturer be used for safety.
3. [K] -marked parts are used for black type only, while O -marked parts are for silver type only.
4. Parts other than [K] -and O -marked are used for both black and silver types.
5. Bracketed indications in Ref. No. columns specify the area. Parts without these indications can be used for all areas.

Black type model No. ST-S7 (K)

Ref. No.		Part No.	Part Name & Description
CABINET and CHASSIS PARTS			
1	O	SYWTS7M	Panel, Front Ass'y
1	K	SYWTS7KD	Panel, Front Ass'y (Black)
2	O	SBC239	Button, Clock Call/Rec Level/Muting
2	K	SBC239–1	Button, Clock Call/Rec Level/Muting (Black)
3	O	SBC235	Button, Memory & Preset
3	K	SBC235–1	Button, Memory & Preset (Black)
4	O	SBC237	Button, Tuning
4	K	SBC237–1	Button, Tuning (Black)
5		SUS167	Spring, Clock Call/Rec Level/Muting Buttons
6		SUS171	Spring, Preset Buttons
7		SHR5047–1	Filter, Display Window
8		SHG6063	Rubber Magnet, Front Panel
9	O	SBN867	Knob, Program Mode
9	K	SBN867–1	Knob, Program Mode (Black)
10		SHGA629	Cushion, FL Display Tube (Rubber)
11		SHG1483	Bracket, Quartz Lock Lamp
12		SHG6051–1	Cushion, Chassis Side (Rubber)
13 [DX] only		SGPTS7DX	Rear Panel, With Chassis & Feet Ass'y
13 [DM] only		SGPTS7DM	Rear Panel, With Chassis & Feet Ass'y
13 [XSW] only		SGPTS7W	Rear Panel, With Chassis & Feet Ass'y
13 [XE] only		SGPTS7E	Rear Panel, With Chassis & Feet Ass'y
13 [XA] only		SGPTS7X	Rear Panel, With Chassis & Feet Ass'y
13 [DG,XGH, EB,XGF]		SGPTS7K	Rear Panel, SGPTS7DX with Name Plate SGT21410)
14		SKL227	Foot, Set Bottom Side
15		**SJFA5101**	Holder, Fuse
16		SJT503	Terminal, Ground (1 pin)
17		SHG647	Cushion, Power Transformer (Rubber)
18		SHS1009	Fiber, Rear Panel
19 [DM] only	⚠	**SJA97**	AC Cord, Power Source (With Plug)
19 [XSW] only	⚠	SJA119	AC Cord, Power Source (With Plug)
19 [XE] only	⚠	**QFC1206M**	AC Cord, Power Source
19 [DG] only	⚠	SJA103–2	AC Cord, Power Source (With Plug)
19 [DX,XGH, XGF,EB,XA]	⚠	SJA103–1	AC Cord, Power Source (With Plug)
20 [DM] only	⚠	SJS9311	Socket, AC Outlet
20 [XSW] only	⚠	SJS9307	Socket, AC Outlet
20 [XE] only	⚠	SJS9303	Socket, AC Outlet
20 [XA] only	⚠	SJSA66–2	Socket, AC Outlet
20 [DX,DG,EB, XGH,XGF]	⚠	SJS9309	Socket, AC Outlet
21 [DM] only		SFSR4N4	Bushing, AC Cord
21 [Other Areas]		SHR131	Bushing, AC Cord
22 [XE] only		SBC159	Button, Power Switch (S9)
23		SHR5073–1	Stopper, FM Antenna Selector
24		SJF4103	Terminal, AM Antenna
25		SJF3431N	Terminal, AF Output
26		SJSA67–1	Socket, FM Antenna (75Ω F-Type)
27	O	SKC150H	Cabinet
27	K	SKC150B	Cabinet (Black)
28		SYE697	Case, Battery Ass'y
29		SJB9001	Cover, Battery Case
30 [XA] only		SHR5073–1	Stopper, FM/AM Allocation Selector (S7)
SCREWS, NUTS and WASHERS			
51		**XTS3+8B**	Screw, Tapping, ⊕ 3 x 8 (Front Panel)
52		**XTB3+6BFZ**	Screw, Tapping, ⊕ 3 x 6 (Reley PCB)
53		**XTB3+8BFN**	Screw, Tapping, ⊕ 3 x 8 (LED PCB)
54		**XNS8**	Nut, M8 (Program Selector)
55		**XWV8**	Washer, Spring, ϕ8
56	O	**XTB3+8BFN**	Screw, Tapping, ⊕ 3 x 8, (Cabinet)
56	K	**XTB3+8BFZ**	Screw, Tapping, ⊕ 3 x 8, (Cabinet) Black
57		**XWC9B**	Washer, Toothed Lock, ϕ9
58		**XTS3+8BFZ**	Screw, Tapping, ⊕ 3 x 8 (Chassis)
59		**XTB3+8BFZ**	Screw, Tapping, ⊕ 3 x 8 (P. Transformer)
60		**XTB3+8BFZ**	Screw, Tapping, ⊕ 3 x 8 (Front & Rear Panel)
61		**XWC3B**	Washer, Toothed Lock, ϕ3
62		**XSN3+6BVS**	Screw, ⊕ 3 x 6 (Antenna Selector & Allocation Selector)
63		**XWA3BFZ**	Washer, Spring, ϕ3
64		SNE2053	Screw, Tapping (W/Lapping Terminal)
65		**XTB3+14BFZ**	Screw, Tapping, ⊕ 3 x 14 (Voltage Adjuster)
66 [XE] only		**XWA3B**	Washer, Spring, ϕ3
67 [XE] only		**XSN3+6S**	Screw, ⊕ 3 x 6 (Power Switch)
ACCESSORIES			
A1		SJP2129–5	Cord, Stereo Pin-Type Connection
A2		SSA267	Cord, FM Indoor Antenna
A3		TJB525100	Plug, 300-ohm → 75-ohm Impedance Conversion
A4		SJSA68–1	Plug, F-Type/Ring (Large)
A5 [XA] only		SJP5213–1	Plug Adaptor, AC Power
PACKING PARTS			
P1		SPP647	Polyethylene Bag
P2		SPS2459–2	Pad, Left Side
P3		SPS2459–3	Pad, Right Side
P4 [XGF] only		SPG2423–1	Carton Box
P4 [Other Areas]		SPG2589	Carton Box
P5 [XE] only		SQF10519	Instructions Book, Printed Matter
P5 [XA] only		SQF10551–1	Instructions Book, Printed Matter
P5 [Other Areas]		SQF10349	Instructions Book, Printed Matter

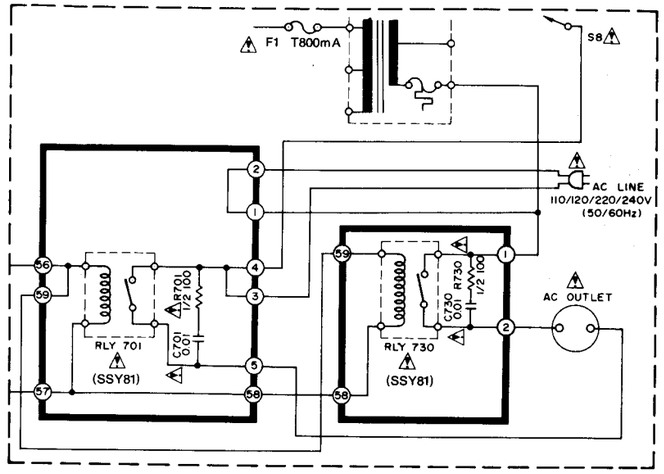
Areas

* [DX] is available in Scandinavia except Denmark.
* [DG] is available in Scandinavia and European except Belgium, United Kingdom, Switzerland, Holland and France.
* [DM] is available in Denmark.
* [EB] is available in Belgium.
* [XE] is available in United Kingdom.
* [XSW] is available in Switzerland.
* [XGH] is available in Holland.
* [XGF] is available in France.
* [XA] is available in Asia, Latin America, Middle East and Africa.

■ POWER SOURCE CIRCUITS

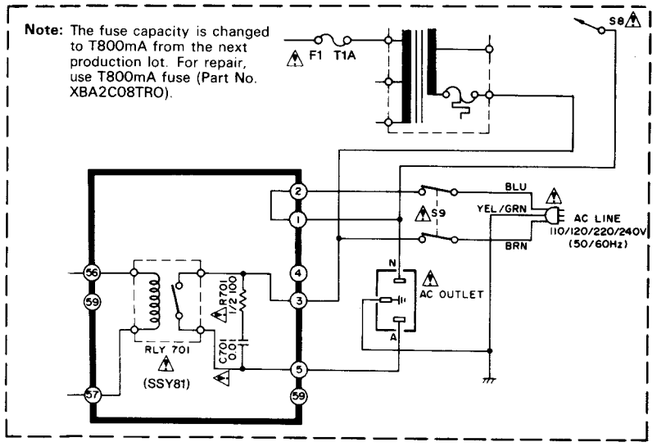
These schematic diagrams are available in Denmark [DM], United Kingdom [XE], Asia, Latin America, Middle East and Africa [XA].

- **For Denmark [DM]**

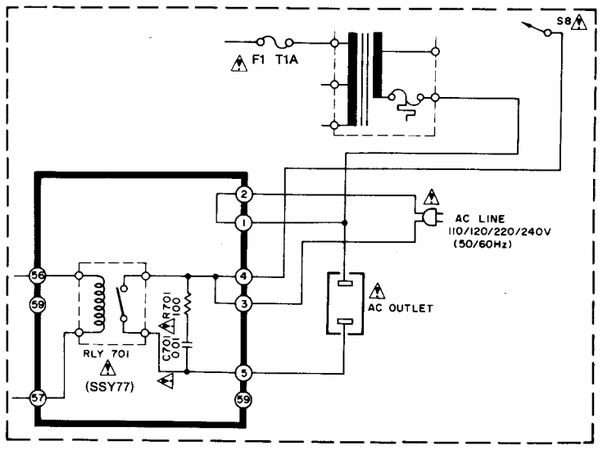


- **For United Kingdom [XE]**

Note: The fuse capacity is changed to T800mA from the next production lot. For repair, use T800mA fuse (Part No. XBA2C08TRO).



- **For Asia, Latin America, Middle East and Africa [XA]**



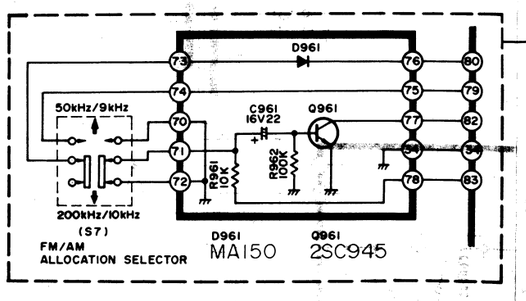
■ SCHEMATIC DIAGRAM

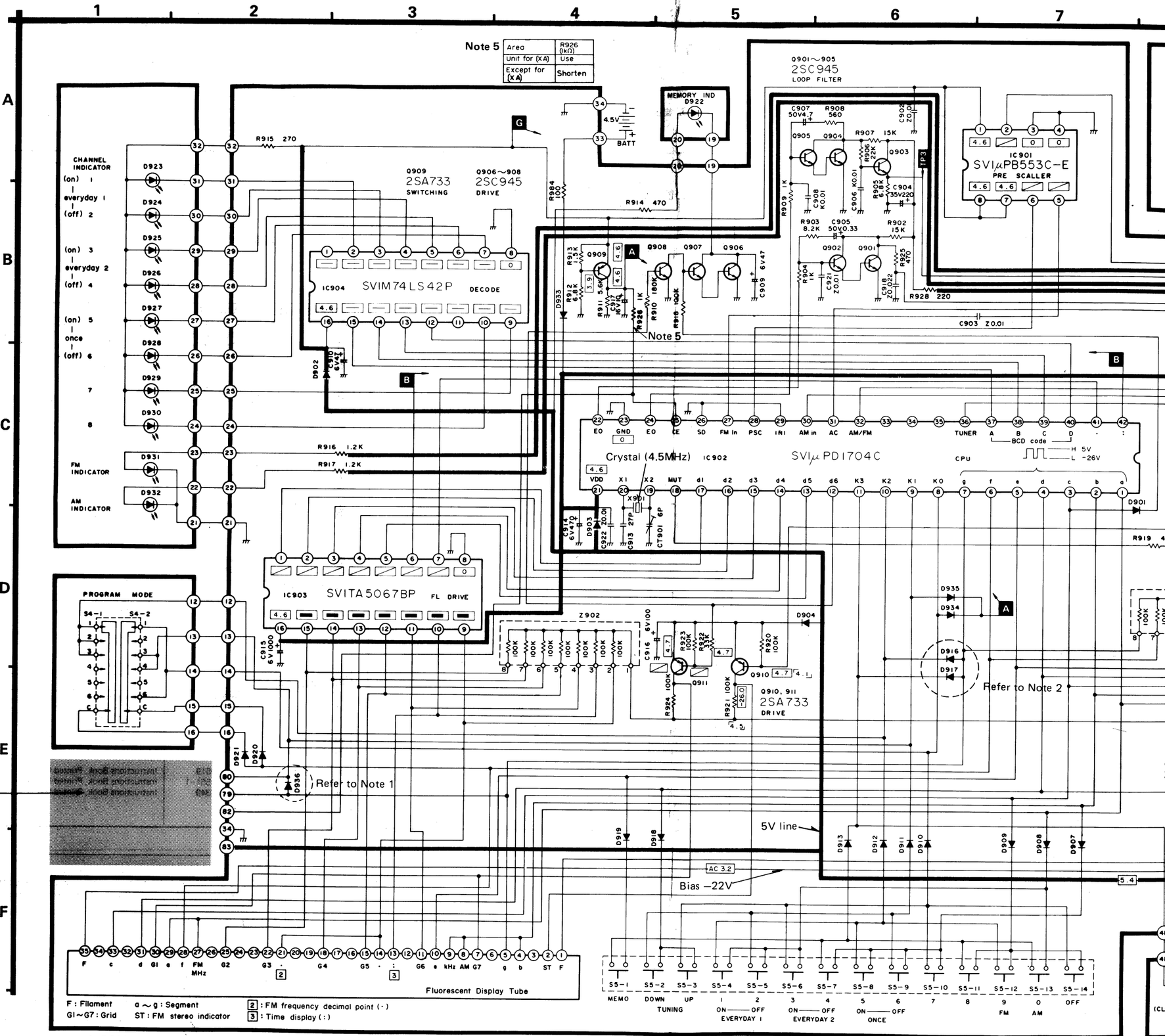
(This schematic diagram may be modified at any time with the development of new technology.)

Notes:

1. **S1-1, S1-2** : AM · FM muting/FM mode switch in "**on/auto**" position. (on/auto ⟷ off/mono)
2. **S2-1, S2-2** : Recording-level check switch in "**off**" position.
3. **S3** : Time display (clock call) switch in "**off**" position.
4. **S4-1, S4-2** : Program mode selection switch in "**time set**" position. (① time set ⟷ ② manual ⟷ ③ auto ⟷ ④ read ⟷ ⑤ write ⟷ ⑥ cancel)
5. **S5-1** : Memory switch in no push condition.
6. **S5-2, S5-3** : Manual tuning (up/down) switch in no push condition.
7. **S5-4 ~ S5-9** : Timer-memory switch in no push condition. (Button No. 1 ~ 6) (everyday 1 "on-off", everyday 2 "on-off", once "on-off")
8. **S5-4 ~ S5-11** : Preset tuning switch in no push condition. (Button No. 1 ~ 8)
9. **S5-4 ~ S5-13** : Time-set switch in no push condition. (Button No. 1 ~ 0)
10. **S5-12, S5-13** : FM/AM band selection and tuner "on" switch in no push condition. (Button No. 9 and 0)
11. **S5-14** : Tuner "off" switch in no push condition.
12. **S6** : FM antenna selection switch in "normal" position. (normal ⟷ tuned type)
13. **S7 [XA] only** : FM/AM allocation selection switch in "**FM 200kHz/AM 10kHz**" step position. (FM 200kHz/AM 10kHz ⟷ FM 50kHz/AM 9kHz)
14. **S8** : Voltage adjustment switch in "**220V**" position. 110V⟷120V⟷220V⟷240V
15. **S9 [XE] only** : Power source switch in "**on**" position. (Refer to page 23) (This switch is used to United Kingdom)
16. Indicated voltage values are the standard values for the unit measured by the DC electronic circuit tester (high-impedance) with the chassis taken as standard. Therefore, there may exist some errors in the voltage values, depending on the internal impedance of the DC circuit tester.
    - Figures in ▭ stand for DC voltage in FM/AM signal reception mode.
    - Figures in ⌐ ¬ stand for DC voltage in FM stereo signal reception mode.
    - Figures in < > stand for DC voltage in FM (no signal) muting to on mode.
    - Figures in ( ) stand for DC voltage with the FM/AM selector circuit set at AM.
    - ▭ marked terminal: 5V input and 0V output, receiving the signal.
    - ▭ marked terminal: 5V or 0V output.
    - ▭ marked terminal: 5V or −26V output.
17. Transistor · IC terminals which carry no voltage indication emit 5V pulse waveforms or are subject to change according to the frequency or input signal levels.
18. Signal lines
    - ⇨ FM/FM composite signal
    - ⇨ Audio frequency signal
    - ▬ Positive voltage lines
    - ▨ Pilot (19kHz) signal
    - ▬▶ / ▪▪▪▶ AM signal
19.
20. ⚠ indicates that only parts specified by the manufacturer be used for safety.
21. Areas
    [XA] is available in Asia, Latin America, Middle East and Africa.
    [XE] is available in United Kingdom.

- **This circuit is FM/AM allocation switch for Asia, Latin America, Middle East and Africa.([XA] area)**
- **The units for other areas except [XA] are not equipped with this circuit.**





Note 1: D936 is not used to a unit employed FM/AM allocation selector(S7). **Note 2:** D916 and D917 are used or not used according to the rank of ceramic filter. (Refer to "Precautions for Repair" on page 8.)

ST-S7 ST-S7

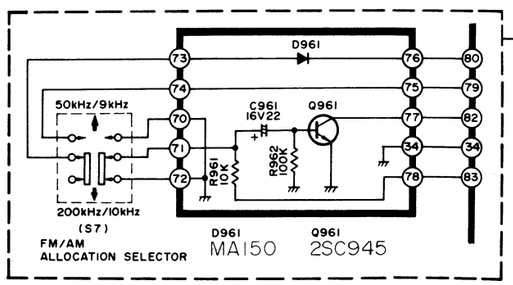
■ SCHEMATIC DIAGRAM

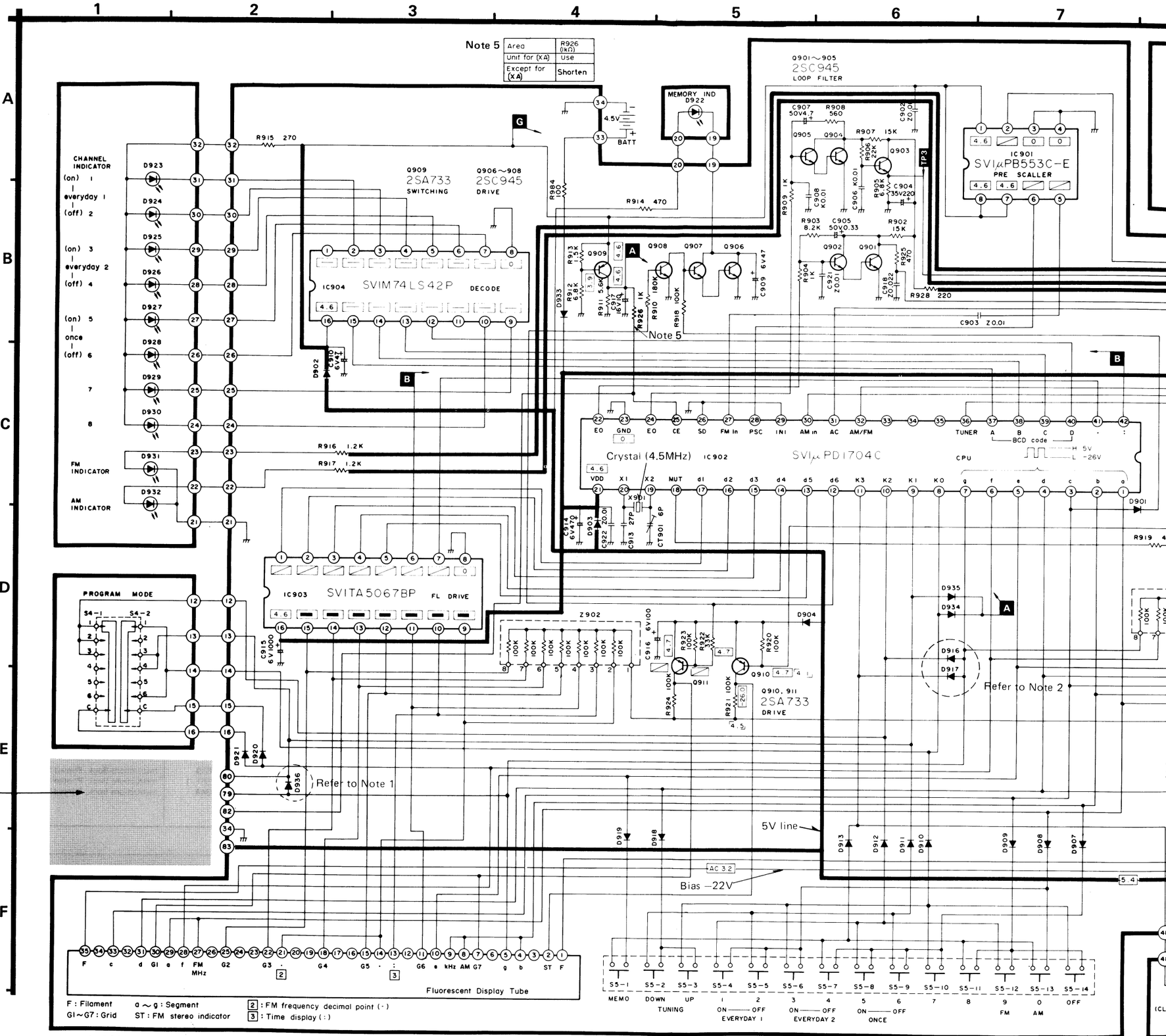
(This schematic diagram may be modified at any time with the development of new technology.)

Notes:

1. **S1-1, S1-2** : AM · FM muting/FM mode switch in "**on/auto**" position. (on/auto ⟷ off/mono)
2. **S2-1, S2-2** : Recording-level check switch in "**off**" position.
3. **S3** : Time display (clock call) switch in "**off**" position.
4. **S4-1, S4-2** : Program mode selection switch in "**time set**" position. (① time set ⟷ ② manual ⟷ ③ auto ⟷ ④ read ⟷ ⑤ write ⟷ ⑥ cancel)
5. **S5-1** : Memory switch in no push condition.
6. **S5-2, S5-3** : Manual tuning (up/down) switch in no push condition.
7. **S5-4 ~ S5-9** : Timer-memory switch in no push condition. (Button No. 1 ~ 6) (everyday 1 "on-off", everyday 2 "on-off", once "on-off")
8. **S5-4 ~ S5-11** : Preset tuning switch in no push condition. (Button No. 1 ~ 8)
9. **S5-4 ~ S5-13** : Time-set switch in no push condition. (Button No. 1 ~ 0)
10. **S5-12, S5-13** : FM/AM band selection and tuner "on" switch in no push condition. (Button No. 9 and 0)
11. **S5-14** : Tuner "off" switch in no push condition.
12. **S6** : FM antenna selection switch in "normal" position. (normal ⟷ tuned type)
13. **S7 [XA] only** : FM/AM allocation selection switch in "**FM 200kHz/AM 10kHz**" step position. (FM 200kHz/AM 10kHz ⟷ FM 50kHz/AM 9kHz)
14. **S8** : Voltage adjustment switch in "**220V**" position. 110V⟷120V⟷220V⟷240V
15. **S9 [XE] only** : Power source switch in "**on**" position. (Refer to page 23) (This switch is used to United Kingdom)
16. Indicated voltage values are the standard values for the unit measured by the DC electronic circuit tester (high-impedance) with the chassis taken as standard. Therefore, there may exist some errors in the voltage values, depending on the internal impedance of the DC circuit tester.
    - Figures in ▭ stand for DC voltage in FM/AM signal reception mode.
    - Figures in ⌐ ¬ stand for DC voltage in FM stereo signal reception mode.
    - Figures in < > stand for DC voltage in FM (no signal) muting to on mode.
    - Figures in ( ) stand for DC voltage with the FM/AM selector circuit set at AM.
    - ▭ marked terminal: 5V input and 0V output, receiving the signal.
    - ▭ marked terminal: 5V or 0V output.
    - ▭ marked terminal: 5V or −26V output.
17. Transistor · IC terminals which carry no voltage indication emit 5V pulse waveforms or are subject to change according to the frequency or input signal levels.
18. Signal lines
    - ⇨ FM/FM composite signal
    - Audio frequency signal
    - ▨ Pilot (19kHz) signal
    - ➡ / ▪▪▪ ➡ AM signal
19. ▬ Positive voltage lines
20. ⚠ indicates that only parts specified by the manufacturer be used for safety.
21. Areas
    [XA] is available in Asia, Latin America, Middle East and Africa.
    [XE] is available in United Kingdom.

- This circuit is FM/AM allocation switch for Asia, Latin America, Middle East and Africa.([XA] area)
- The units for other areas except [XA] are not equipped with this circuit.





Note 1: D936 is not used to a unit employed FM/AM allocation selector(S7). **Note 2:** D916 and D917 are used or not used according to the rank of ceramic filter. (Refer to "Precautions for Repair" on page 8.)

5 6 7 8 9 10 11 12 13 14 15

Note 3

Areas	R217
Units for (XA) only	12kΩ
Except for (XA)	18kΩ

Note 4

Areas	R802 (680Ω)
Units for (XE) and (XA)	Shorten
Except for (XE) and (XA)	Use

Q901~905 2SC945 LOOP FILTER

Q981, 982 2SC1684

IC901 SVIμPB553C-E PRE SCALLER

Q1 3SK74 FM RF AMP

Q2 2SC1674 MIX

IC101 SVIAμPC577HF IF AMP

IC102 SVIμPC1167C IF AMP & DET.

FM composite

FM-IF in

FM-IF out

Phase shifter

FM composite signal

Q301 2SC945 PHASE SHIFT

FM muting

Pilot cancel

IC302 AN6552 19kHz AMP/PILOT CANCEL

IC303 SVIμPD4066C MPX PEAK SAMPLING & SWITCHING

(L+R) (L−R) Signal

AM

440Hz

FM ANT (75Ω)

AM ANT Note 4

When FM, 12V line

When AM, 12V line

33V line

AM OSC

Q3, 4 2SC1675 BUFF

Q5 2SC1675 OSC

D612, 613 MA150

Q302 2SC945 MUTING

IC902 SVIμPD1704C CPU

TUNER A B C D BCD code

H 5V L −26V

Refer to Note 2

Q910 2SA733 DRIVE

Q910, 911

Q201 2SC945 BUFF

IC201 AN217 AM CONV.

AM RF in

AM IF out

Rec-level check

Note 3

Q404, 405 2SC945 REC LEVEL & MUTING

5V line

−22V

−28V line

AM muting

S5-4 S5-5 S5-6 S5-7 S5-8 S5-9 S5-10 S5-11 S5-12 S5-13 S5-14

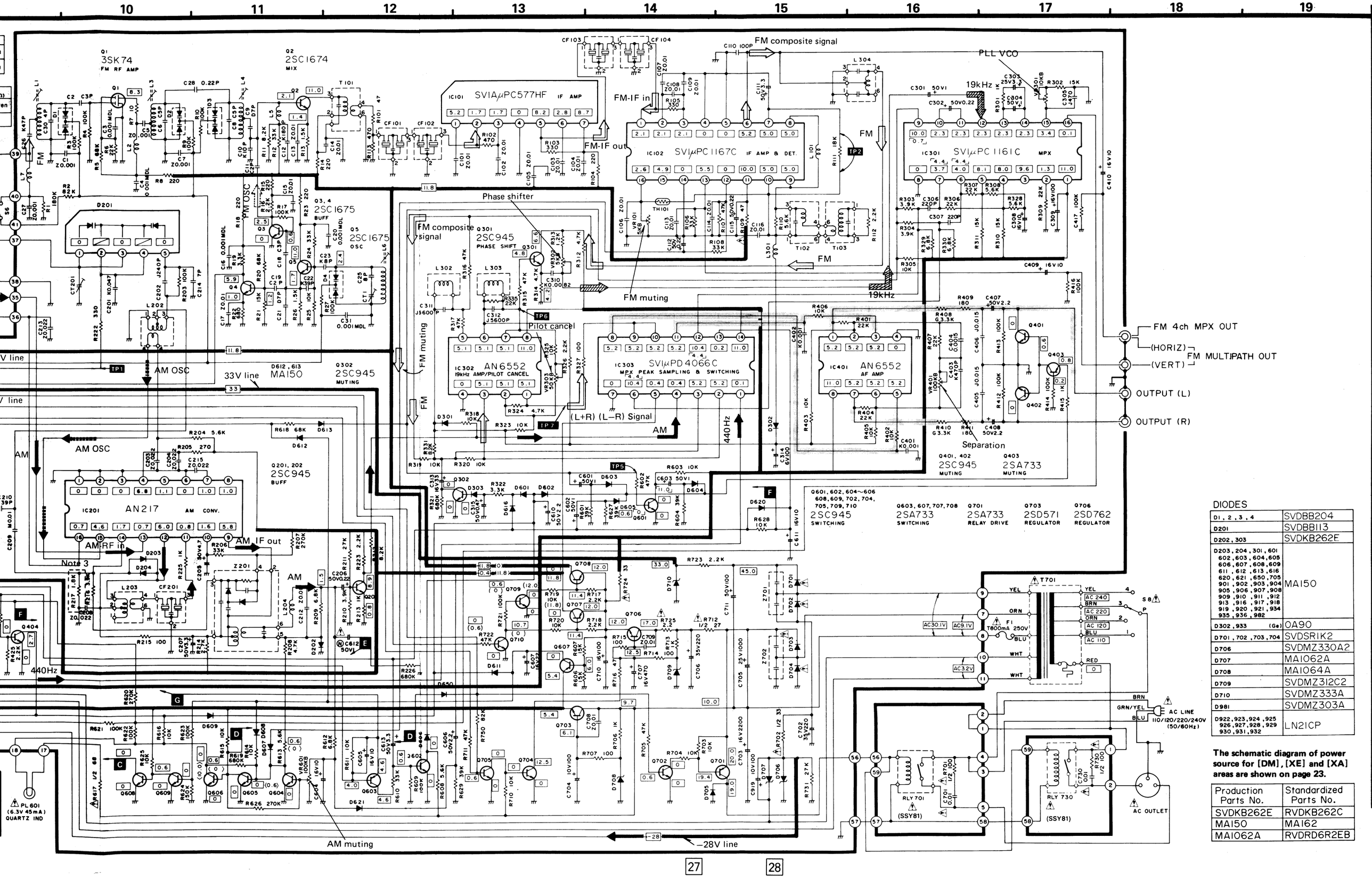
ON—OFF EVERYDAY 1 / EVERYDAY 2 / ONCE

FM AM OFF

S3 (CLOCK CALL) S2-1 (REC LEVEL) S2-2 S1-1 (FM AUTO/MONO) S1-2

PL601 (6.3V 45mA) QUARTZ IND

cording to the rank of ceramic filter. (Refer to "Precautions for Repair" on page 8.)



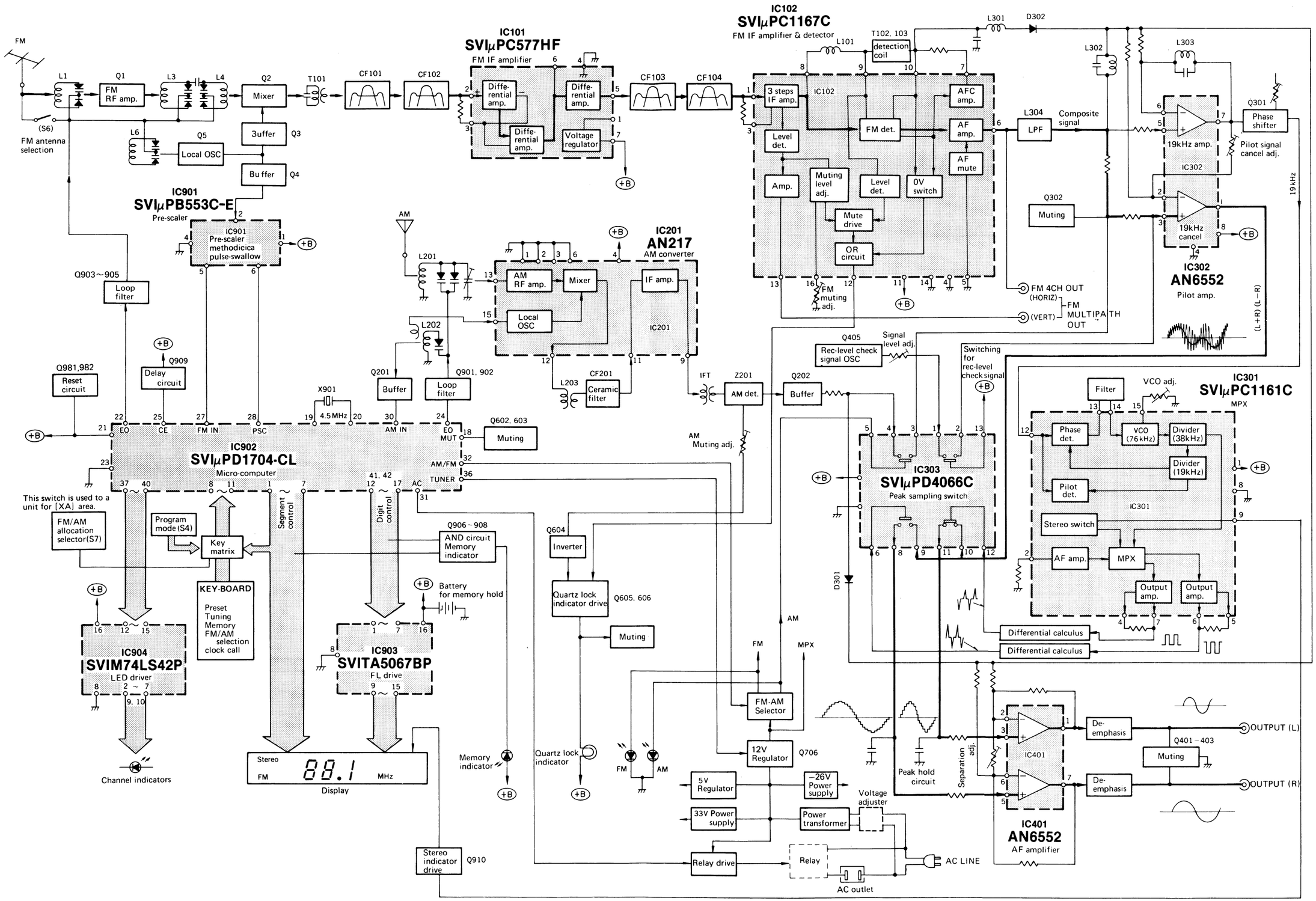
DIODES

D1, 2, 3, 4	SVDBB204
D201	SVDBB113
D202, 303	SVDKB262E
D203, 204, 301, 601 602, 603, 604, 605 606, 607, 608, 609 611, 612, 613, 616 620, 621, 650, 705 901, 902, 903, 904 905, 906, 907, 908 909, 910, 911, 912 913, 916, 917, 918 919, 920, 921, 934 935, 936, 982	MA150
D302, 933 (Ge)	0A90
D701, 702, 703, 704	SVDSRIK2
D706	SVDMZ330A2
D707	MA1062A
D708	MA1064A
D709	SVDMZ312C2
D710	SVDMZ333A
D981	SVDMZ303A
D922, 923, 924, 925 926, 927, 928, 929 930, 931, 932	LN21CP

The schematic diagram of power source for [DM], [XE] and [XA] areas are shown on page 23.

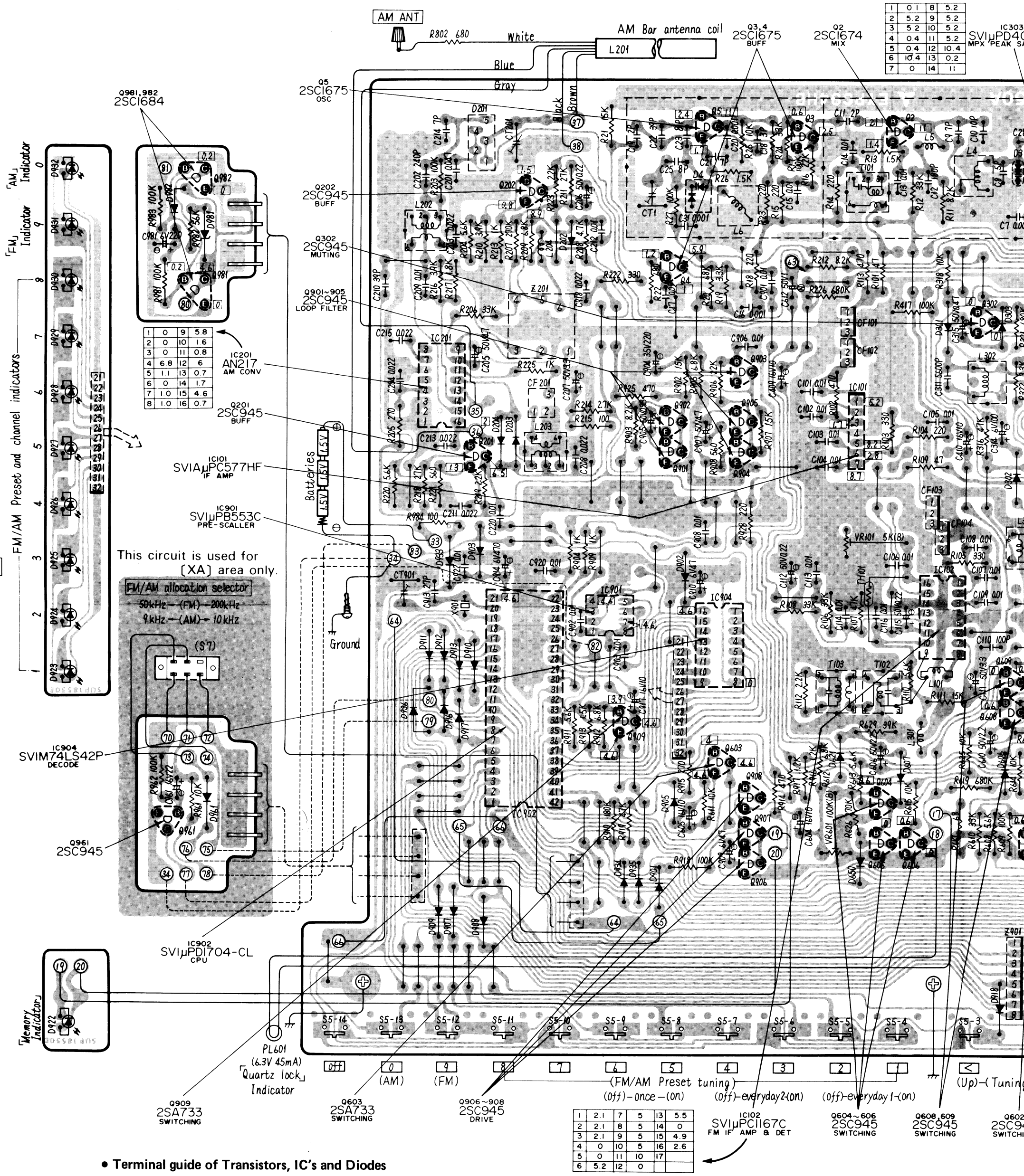
Production Parts No.	Standardized Parts No.
SVDKB262E	RVDKB262C
MA150	MA162
MA1062A	RVDRD6R2EB

■ BLOCK DIAGRAM



■ PRINTED CIRCUIT BOARD WIRING VIEW

Ground (Earth) lines



1	0.1	8	5.2
2	5.2	9	5.2
3	5.2	10	5.2
4	0.4	11	5.2
5	0.4	12	10.4
6	10.4	13	0.2
7	0	14	11

1	0	9	5.8
2	0	10	1.6
3	0	11	0.8
4	6.8	12	6
5	11	13	0.7
6	0	14	1.7
7	1.0	15	4.6
8	1.0	16	0.7

1	2.1	7	5	13	5.5
2	2.1	8	5	14	0
3	2.1	9	5	15	4.9
4	0	10	5	16	2.6
5	0	11	10	17	
6	5.2	12	0		

• Terminal guide of Transistors, IC's and Diodes

3SK74 1. Gate 1 2. Gate 2 3. Drain 4. Source	2SA733, 2SC945, 2SC1674, 2SC1675, 2SC1684	SVIμPC1167C, SVITC5067BP, SVIμPC1161C, AN217	SVIμPD4066C	2SD762	SVISN74LS74	SVDKB262E Red Mark	2SD571

	0.1	8	5.2
	5.2	9	5.2
	5.2	10	5.2
	0.4	11	5.2
	0.4	12	10.4
	10.4	13	0.2
	0	14	11

IC303
SVIμPD4066C
MPX PEAK SAMPLING

Q1
3SK74
FM RF AMP

FM Antenna selector
Normal
Tuned-type
(S6)

FM Antenna 75Ω coaxial

OUTPUT
L
R

4CH MPX OUT
MULTIPATH
HORIZ
VERT

IC401
AN6552
AF AMP

1	5.2	5	5.2
2	5.2	6	5.2
3	5.2	7	5.2
4	0	8	11

This relay circuit is not used for [XA] and [XE] areas.

Relay
RLY730
C730 0.01
R730 100

Q403
2SA733
MUTING

Q401,402
2SC945
MUTING

IC302
AN6552
19kHz AMP

1	5.1	5	5.1
2	5.1	6	5.1
3	5.1	7	5.1
4	0	8	11

IC301
SVIμPC1161C
MPX

1	11	9	10
2	13	10	2.3
3	9.6	11	2.3
4	8	12	2.3
5	8.1	13	2.3
6	4	14	2.3
7	3.7	15	3.4
8	0	16	0.1

Q601
2SC945
SWITCHING

Q404
2SC945
MUTING

Q301
2SC945
PHASE SHIFT

110/120/220/240V
(AC Line)

Brown
Blue
Green/Yellow
Ground

AC Outlet

Q405
2SC945
REC LEVEL OSC

(S8)
Voltage Adjust

RLY701
Relay

Q707,708
2SA733
SWITCHING

Q701
2SA733
RELAY DRIVE

Q706
2SD762
REGULATOR

(Red)
(Blue)
(Orange)
(Brown)
(Yellow)

F1 T800mA
(Blue)
(Orange)
(Yellow)
(White)
(White)

Power Transformer (T701)

Q709,710
2SC945
SWITCHING

Q702,704,705
2SC945
SWITCHING

Q607
2SA733
SWITCHING

Q910,911
2SA733
DRIVE

(S4)
1. time set
2. manual
3. auto
4. read
5. write
6. cancel
Program mode

(S3)
Clock call

(S2)
Rec level

(S1)
muting & FM mode

Stereo
AM
FM
kHz
MHz
Display tube (FL)

Filament
Filament

S5-4
S5-3
S5-2
S5-1
(Up)-(Tuning)-(Down)
Memory
1-(on)

Q608,609
2SC945
SWITCHING

Q602
2SC945
SWITCHING

Q703
2SD571
REGULATOR

IC903
SVITC5067BP
FL DRIVE

KB262E	2SD571	SVIAμPC577HF	AN6552, SVIμPB553C-E	LN21CP	SVIμPD1704CL
Red Mark	E C B	1 2 3 4 5 6 7	7 6 5 / 8 1 2 3 4		42 37 32 27 22 / 1 5 10 15 21

■ RESISTOR AND CAPACITOR PARTS LIST

Notes: 1. ⚠ indicates that only parts specified by the manufacturer be used for safety.
2. Bracketed indications in Ref. No. columns specify the area. Parts without these indications can be used for all areas.

Areas

[XE] is available in United Kingdom.
[XA] is available in Asia, Latin America, Middle East and Africa.

Ref. No.		Part No.	Part Name & Description
RESISTORS			
R1 [XA] only		**ERD50TJ184**	Carbon, 180kΩ, 1/2W, ± 5%
R1 [Other Areas]		**ERD25TJ184**	Carbon, 180kΩ, 1/4W, ± 5%
R2		**ERD25TJ823**	Carbon, 82kΩ, 1/4W, ± 5%
R3, 4		**ERD25TJ104**	Carbon, 100kΩ, 1/4W, ± 5%
R5		**ERD25TJ683**	Carbon, 68kΩ, 1/4W, ± 5%
R6		**ERD25TJ223**	Carbon, 22kΩ, 1/4W, ± 5%
R7		**ERD25FJ100**	Carbon, 10Ω, 1/4W, ± 5%
R8		**ERD25FJ221**	Carbon, 220Ω, 1/4W, ± 5%
R9, 10		**ERD25TJ104**	Carbon, 100kΩ, 1/4W, ± 5%
R11		**ERD25FJ822**	Carbon, 8.2kΩ, 1/4W, ± 5%
R12		**ERD25TJ333**	Carbon, 33kΩ, 1/4W, ± 5%
R13		**ERD25FJ152**	Carbon, 1.5kΩ, 1/4W, ± 5%
R14, 15		**ERD25FJ221**	Carbon, 220Ω, 1/4W, ± 5%
R16		**ERD25FJ222**	Carbon, 2.2kΩ, 1/4W, ± 5%
R17		**ERD25TJ104**	Carbon, 100kΩ, 1/4W, ± 5%
R18		**ERD25FJ221**	Carbon, 220Ω, 1/4W, ± 5%
R19		**ERD25FJ332**	Carbon, 3.3kΩ, 1/4W, ± 5%
R20		**ERD25TJ683**	Carbon, 68kΩ, 1/4W, ± 5%
R21		**ERD25TJ153**	Carbon, 15kΩ, 1/4W, ± 5%
R22		**ERD25FJ681**	Carbon, 680Ω, 1/4W, ± 5%
R23		**ERD25FJ221**	Carbon, 220Ω, 1/4W, ± 5%
R24		**ERD25TJ333**	Carbon, 33kΩ, 1/4W, ± 5%
R25		**ERD25FJ103**	Carbon, 10kΩ, 1/4W, ± 5%
R26		**ERD25FJ152**	Carbon, 1.5kΩ, 1/4W, ± 5%
R27		**ERD25TJ104**	Carbon, 100kΩ, 1/4W, ± 5%
R101		**ERD25FJ470**	Carbon, 47Ω, 1/4W, ± 5%
R102		**ERD25FJ471**	Carbon, 470Ω, 1/4W, ± 5%
R103		**ERD25FJ331**	Carbon, 330Ω, 1/4W, ± 5%
R104		**ERD25FJ221**	Carbon, 220Ω, 1/4W, ± 5%
R105		**ERD25FJ331**	Carbon, 330Ω, 1/4W, ± 5%
R106		**ERD25TJ333**	Carbon, 33kΩ, 1/4W, ± 5%
R107		**ERD25TJ473**	Carbon, 47kΩ, 1/4W, ± 5%
R108		**ERD25TJ333**	Carbon, 33kΩ, 1/4W, ± 5%
R109	⚠	**ERD25FJ470**	Carbon, 47Ω, 1/4W, ± 5%
R110		**ERD25FJ562**	Carbon, 5.6kΩ, 1/4W, ± 5%
R111		**ERD25TJ183**	Carbon, 18kΩ, 1/4W, ± 5%
R112		**ERD25FJ222**	Carbon, 2.2kΩ, 1/4W, ± 5%
R113		**ERD25FJ471**	Carbon, 470Ω, 1/4W, ± 5%
R203		**ERD25TJ104**	Carbon, 100kΩ, 1/4W, ± 5%
R204		**ERD25FJ562**	Carbon, 5.6kΩ, 1/4W, ± 5%
R205		**ERD25FJ271**	Carbon, 270Ω, 1/4W, ± 5%
R206		**ERD25TJ333**	Carbon, 33kΩ, 1/4W, ± 5%
R207		**ERD25TJ274**	Carbon, 270kΩ, 1/4W, ± 5%
R208		**ERD25FJ472**	Carbon, 4.7kΩ, 1/4W, ± 5%
R209		**ERD25FJ682**	Carbon, 6.8kΩ, 1/4W, ± 5%
R210		**ERD25FJ392**	Carbon, 3.9kΩ, 1/4W, ± 5%
R211		**ERD25TJ273**	Carbon, 27kΩ, 1/4W, ± 5%
R212		**ERD25FJ822**	Carbon, 8.2kΩ, 1/4W, ± 5%
R213		**ERD25FJ102**	Carbon, 1kΩ, 1/4W, ± 5%
R214		**ERD25FJ272**	Carbon, 2.7kΩ, 1/4W, ± 5%
R215		**ERD25FJ101**	Carbon, 100Ω, 1/4W, ± 5%
R216		**ERD25FJ392**	Carbon, 3.9kΩ, 1/4W, ± 5%
R217 [XA] only		**ERD25FJ122**	Carbon, 1.2kΩ, 1/4W, ± 5%
R217 [Other Areas]		**ERD25FJ182**	Carbon, 1.8kΩ, 1/4W, ± 5%
R218		**ERD25TJ273**	Carbon, 27kΩ, 1/4W, ± 5%
R219		**ERD25FJ222**	Carbon, 2.2kΩ, 1/4W, ± 5%
R220		**ERD25FJ562**	Carbon, 5.6kΩ, 1/4W, ± 5%
R221		**ERD25FJ561**	Carbon, 560Ω, 1/4W, ± 5%
R222		**ERD25FJ331**	Carbon, 330Ω, 1/4W, ± 5%
R223		**ERD25FJ222**	Carbon, 2.2kΩ, 1/4W, ± 5%
R225		**ERD25FJ102**	Carbon, 1kΩ, 1/4W, ± 5%
R226		**ERD25TJ684**	Carbon, 680kΩ, 1/4W, ± 5%
R301		**ERD25FJ102**	Carbon, 1kΩ, 1/4W, ± 5%
R302		**ERD25TJ153**	Carbon, 15kΩ, 1/4W, ± 5%
R303, 304		**ERD25FJ392**	Carbon, 3.9kΩ, 1/4W, ± 5%
R305		**ERD25FJ103**	Carbon, 10kΩ, 1/4W, ± 5%
R306, 307		**ERD25TJ223**	Carbon, 22kΩ, 1/4W, ± 5%
R308		**ERD25FJ562**	Carbon, 5.6kΩ, 1/4W, ± 5%
R309		**ERD25TJ223**	Carbon, 22kΩ, 1/4W, ± 5%
R310, 311		**ERD25TJ153**	Carbon, 15kΩ, 1/4W, ± 5%
R312		**ERD25FJ472**	Carbon, 4.7kΩ, 1/4W, ± 5%
R313		**ERD25FJ122**	Carbon, 1.2kΩ, 1/4W, ± 5%
R314		**ERD25FJ472**	Carbon, 4.7kΩ, 1/4W, ± 5%
R315		**ERD25TJ473**	Carbon, 47kΩ, 1/4W, ± 5%
R316, 317		**ERD25TJ473**	Carbon, 47kΩ, 1/4W, ± 5%
R318, 319		**ERD25FJ103**	Carbon, 10kΩ, 1/4W, ± 5%
R320		**ERD25FJ103**	Carbon, 10kΩ, 1/4W, ± 5%
R321		**ERD25TJ684**	Carbon, 680kΩ, 1/4W, ± 5%
R322		**ERD25FJ332**	Carbon, 3.3kΩ, 1/4W, ± 5%
R323		**ERD25FJ103**	Carbon, 10kΩ, 1/4W, ± 5%
R324		**ERD25FJ472**	Carbon, 4.7kΩ, 1/4W, ± 5%
R325		**ERD25FJ103**	Carbon, 10kΩ, 1/4W, ± 5%
R326		**ERD25FJ222**	Carbon, 2.2kΩ, 1/4W, ± 5%
R327		**ERD25FJ101**	Carbon, 100Ω, 1/4W, ± 5%
R328		**ERD25FJ562**	Carbon, 5.6kΩ, 1/4W, ± 5%
R329, 330		**ERD25FJ682**	Carbon, 6.8kΩ, 1/4W, ± 5%
R331		**ERD25FJ822**	Carbon, 8.2kΩ, 1/4W, ± 5%
R335		**ERD25TJ223**	Carbon, 22kΩ, 1/4W, ± 5%
R401		**ERD25TJ223**	Carbon, 22kΩ, 1/4W, ± 5%
R402, 403		**ERD25FJ103**	Carbon, 10kΩ, 1/4W, ± 5%
R404		**ERD25TJ223**	Carbon, 22kΩ, 1/4W, ± 5%
R405, 406		**ERD25FJ103**	Carbon, 10kΩ, 1/4W, ± 5%
R407		**ERD25TJ223**	Carbon, 22kΩ, 1/4W, ± 5%
R408		**ERO25CKF3301**	Metal Film, 3.3kΩ, 1/4W, ± 1%
R409		**ERD25FJ181**	Carbon, 180Ω, 1/4W, ± 5%
R410		**ERO25CKF3301**	Metal Film, 3.3kΩ, 1/4W, ± 1%
R411		**ERD25FJ181**	Carbon, 180Ω, 1/4W, ± 5%
R412, 413		**ERD25TJ104**	Carbon, 100kΩ, 1/4W, ± 5%
R414		**ERD25TJ104**	Carbon, 100kΩ, 1/4W, ± 5%
R415		**ERD25FJ102**	Carbon, 1kΩ, 1/4W, ± 5%
R416, 417		**ERD25TJ104**	Carbon, 100kΩ, 1/4W, ± 5%
R418, 419		**ERD25FJ103**	Carbon, 10kΩ, 1/4W, ± 5%
R420		**ERD25TJ473**	Carbon, 47kΩ, 1/4W, ± 5%
R421		**ERD25TJ104**	Carbon, 100kΩ, 1/4W, ± 5%
R422		**ERD25FJ392**	Carbon, 3.9kΩ, 1/4W, ± 5%
R423		**ERD25TJ123**	Carbon, 12kΩ, 1/4W, ± 5%
R424		**ERD25FJ103**	Carbon, 10kΩ, 1/4W, ± 5%
R425		**ERD25FJ222**	Carbon, 2.2kΩ, 1/4W, ± 5%
R601		**ERD25TJ393**	Carbon, 39kΩ, 1/4W, ± 5%
R602		**ERD25TJ473**	Carbon, 47kΩ, 1/4W, ± 5%
R603		**ERD25FJ103**	Carbon, 10kΩ, 1/4W, ± 5%
R604		**ERD25TJ393**	Carbon, 39kΩ, 1/4W, ± 5%
R606, 607		**ERD25TJ153**	Carbon, 15kΩ, 1/4W, ± 5%
R608		**ERD25FJ562**	Carbon, 5.6kΩ, 1/4W, ± 5%
R609		**ERD25TJ104**	Carbon, 100kΩ, 1/4W, ± 5%
R610		**ERD25TJ333**	Carbon, 33kΩ, 1/4W, ± 5%
R611		**ERD25FJ103**	Carbon, 10kΩ, 1/4W, ± 5%
R612		**ERD25FJ682**	Carbon, 6.8kΩ, 1/4W, ± 5%
R613		**ERD25FJ562**	Carbon, 5.6kΩ, 1/4W, ± 5%
R614, 615		**ERD25FJ103**	Carbon, 10kΩ, 1/4W, ± 5%
R616		**ERD25FJ103**	Carbon, 10kΩ, 1/4W, ± 5%
R617	⚠	**ERD50FJ680**	Carbon, 68Ω, 1/2W, ± 5%
R618		**ERD25TJ683**	Carbon, 68kΩ, 1/4W, ± 5%
R619		**ERD25TJ684**	Carbon, 680kΩ, 1/4W, ± 5%
R620		**ERD25TJ274**	Carbon, 270kΩ, 1/4W, ± 5%
R621, 622		**ERD25TJ104**	Carbon, 100kΩ, 1/4W, ± 5%
R623		**ERD25TJ104**	Carbon, 100kΩ, 1/4W, ± 5%
R624		**ERD25TJ154**	Carbon, 150kΩ, 1/4W, ± 5%
R625		**ERD25FJ103**	Carbon, 10kΩ, 1/4W, ± 5%
R626		**ERD25TJ274**	Carbon, 270kΩ, 1/4W, ± 5%
R627		**ERD25TJ393**	Carbon, 39kΩ, 1/4W, ± 5%
R628		**ERD25FJ103**	Carbon, 10kΩ, 1/4W, ± 5%
R629		**ERD25TJ393**	Carbon, 39kΩ, 1/4W, ± 5%
R701	⚠	**ERD50FJ101**	Carbon, 100Ω, 1/2W, ± 5%
R702	⚠	**ERD50FJ330**	Carbon, 33Ω, 1/2W, ± 5%
R703, 704		**ERD25FJ103**	Carbon, 10kΩ, 1/4W, ± 5%
R705		**ERD25TJ473**	Carbon, 47kΩ, 1/4W, ± 5%
R706		**ERD25FJ102**	Carbon, 1kΩ, 1/4W, ± 5%
R707		**ERD25FJ101**	Carbon, 100Ω, 1/4W, ± 5%
R710		**ERD25FJ103**	Carbon, 10kΩ, 1/4W, ± 5%
R711		**ERD25TJ473**	Carbon, 47kΩ, 1/4W, ± 5%
R712	⚠	ERQ12HJ270	Fuse Type Metallic, 27Ω 1/2W, ± 5%
R713		**ERD25FJ102**	Carbon, 1kΩ, 1/4W, ± 5%
R714, 715		**ERD25FJ101**	Carbon, 100Ω, 1/4W, ± 5%
R716		**ERD25FJ470**	Carbon, 47Ω, 1/4W, ± 5%
R717, 718		**ERD25FJ222**	Carbon, 2.2kΩ, 1/4W, ± 5%
R719, 720		**ERD25FJ103**	Carbon, 10kΩ, 1/4W, ± 5%
R721		**ERD25TJ104**	Carbon, 100kΩ, 1/4W, ± 5%
R722		**ERD25TJ473**	Carbon, 47kΩ, 1/4W, ± 5%
R723		**ERD25FJ222**	Carbon, 2.2kΩ, 1/4W, ± 5%
R724	⚠	**ERD25FJ330**	Carbon, 33Ω, 1/4W, ± 5%
R725	⚠	**ERD25FJ2R2**	Carbon, 2.2Ω, 1/4W, ± 5%
R730 Except for [XA & XE]	⚠	**ERD50FJ101**	Carbon, 100Ω, 1/2W, ± 5%

Ref. No.		Part No.	Part Name & Description
R731		**ERD25TJ273**	Carbon, 27kΩ, 1/4W, ± 5%
R750		**ERD25TJ823**	Carbon, 82kΩ, 1/4W, ± 5%
R802 Except for [XA & XE]		**ERD25FJ681**	Carbon, 680Ω, 1/4W, ± 5%
R902		**ERD25TJ153**	Carbon, 15kΩ, 1/4W, ± 5%
R903		**ERD25FJ822**	Carbon, 8.2kΩ, 1/4W, ± 5%
R904		**ERD25FJ102**	Carbon, 1kΩ, 1/4W, ± 5%
R905		**ERD25FJ682**	Carbon, 6.8kΩ, 1/4W, ± 5%
R906		**ERD25TJ223**	Carbon, 22kΩ, 1/4W, ± 5%
R907		**ERD25TJ153**	Carbon, 15kΩ, 1/4W, ± 5%
R908		**ERD25FJ561**	Carbon, 560Ω, 1/4W, ± 5%
R909		**ERD25FJ102**	Carbon, 1kΩ, 1/4W, ± 5%
R910		**ERD25TJ184**	Carbon, 180kΩ, 1/4W, ± 5%
R911		**ERD25FJ562**	Carbon, 5.6kΩ, 1/4W, ± 5%
R912		**ERD25FJ682**	Carbon, 6.8kΩ, 1/4W, ± 5%
R913		**ERD25FJ152**	Carbon, 1.5kΩ, 1/4W, ± 5%
R914		**ERD25FJ471**	Carbon, 470Ω, 1/4W, ± 5%
R915		**ERD25FJ271**	Carbon, 270Ω, 1/4W, ± 5%
R916, 917		**ERD25FJ122**	Carbon, 1.2kΩ, 1/4W, ± 5%
R918		**ERD25TJ104**	Carbon, 100kΩ, 1/4W, ± 5%
R919		**ERD25TJ473**	Carbon, 47kΩ, 1/4W, ± 5%
R920, 921		**ERD25TJ104**	Carbon, 100kΩ, 1/4W, ± 5%
R922		**ERD25TJ333**	Carbon, 33kΩ, 1/4W, ± 5%
R923, 924		**ERD25TJ104**	Carbon, 100kΩ, 1/4W, ± 5%
R925		**ERD25FJ471**	Carbon, 470Ω, 1/4W, ± 5%
R926 [XA] only		**ERD25FJ102**	Carbon, 1kΩ, 1/4W, ± 5%
R928		**ERD25FJ221**	Carbon, 220Ω, 1/4W, ± 5%
R961 [XA] only		**ERD25FJ103**	Carbon, 10kΩ, 1/4W, ± 5%
R962 [XA] only		**ERD25TJ104**	Carbon, 100kΩ, 1/4W, ± 5%
R981		**ERD25TJ104**	Carbon, 100kΩ, 1/4W, ± 5%
R982		**ERD25TJ563**	Carbon, 56kΩ, 1/4W, ± 5%
R983		**ERD25TJ104**	Carbon, 100kΩ, 1/4W, ± 5%
R984		**ERD25FJ101**	Carbon, 100Ω, 1/4W, ± 5%
CAPACITORS			
C1		ECKD1H102ZF	Ceramic, 0.001μF, 50V, +80 −20 %
C2		ECCD1H030CC	Ceramic, 3pF, 50V, ±0.25pF
C3, 4		ECKD1H102MDA	Ceramic, 0.001μF, 50V, ±20%
C5		ECKD1H102ZF	Ceramic, 0.001μF, 50V, +80 −20 %
C6		ECCD1H050CC	Ceramic, 5pF, 50V, ±0.25pF
C7		ECKD1H102ZF	Ceramic, 0.001μF, 50V, +80 −20 %
C8		ECCD1H050CC	Ceramic, 5pF, 50V, ±0.25pF
C9		ECCD1H070DC	Ceramic, 7pF, 50V, ±0.5pF
C10		ECCD1H100KC	Ceramic, 10pF, 50V, ±10%
C11		ECCD1H020CC	Ceramic, 2pF, 50V, ±0.25pF
C12		ECCD1H181K	Ceramic, 180pF, 50V, ±10%
C13, 14		ECKD1H103ZF	Ceramic, 0.01μF, 50V, +80 −20 %
C15		ECKD1H103ZF	Ceramic, 0.01μF, 50V, +80 −20 %
C16		ECKD1H102MDA	Ceramic, 0.001μF, 50V, ±20%
C17		ECKD1H103ZF	Ceramic, 0.01μF, 50V, +80 −20 %
C18		ECCD1H030CC	Ceramic, 3pF, 50V, ±0.25pF
C19		ECCD1H020CC	Ceramic, 2pF, 50V, ±0.25pF
C20		ECKD1H102MDA	Ceramic, 0.001μF, 50V, ±20%
C21		ECCD1H070DC	Ceramic, 7pF, 50V, ±0.5pF
C22		ECCD1H390KC	Ceramic, 39pF, 50V, ±10%
C23		ECCD1H080DC	Ceramic, 8pF, 50V, ±0.5pF
C25		ECCD1H080DC	Ceramic, 8pF, 50V, ±0.5pF
C26		ECCD1H470K	Ceramic, 47pF, 50V, ±10%
C27		ECKD1H102ZF	Ceramic, 0.001μF, 50V, +80 −20 %
C28		ECGN5R22K	Ceramic, 0.22pF, 500V, ±10%
C30		ECCD1H040CC	Ceramic, 4pF, 50V, ±0.25pF
C31		ECKD1H102MDA	Ceramic, 0.001μF, 50V, ±20%
C101, 102		ECKD1H103ZF	Ceramic, 0.01μF, 50V, +80 −20 %
C103, 104		ECKD1H103ZF	Ceramic, 0.01μF, 50V, +80 −20 %
C105, 106		ECKD1H103ZF	Ceramic, 0.01μF, 50V, +80 −20 %
C107, 108		ECKD1H103ZF	Ceramic, 0.01μF, 50V, +80 −20 %
C109		ECKD1H103ZF	Ceramic, 0.01μF, 50V, +80 −20 %
C110		ECCD1H101K	Ceramic, 100pF, 50V, ±10%
C111		**ECEA50Z3R3**	Electrolytic, 3.3μF, 50V
C112		**ECEA50ZR22**	Electrolytic, 0.22μF, 50V
C113, 114		ECKD1H103ZF	Ceramic, 0.01μF, 50V, +80 −20 %
C115		**ECEA50ZR22**	Electrolytic, 0.22μF, 50V
C116		ECKD1H103ZF	Ceramic, 0.01μF, 50V, +80 −20 %
C201		ECQM1H473KZ	Polyester, 0.047μF, 50V, ±10%
C202		ECQS1241JZ	Polystyrene, 240pF, 125V, ± 5%
C203, 204		ECKD1H223ZF	Ceramic, 0.022μF, 50V, +80 −20 %
C205		**ECEA1JS4R7**	Electrolytic, 4.7μF, 63V

Ref. No.		Part No.	Part Name & Description
C206		**ECEA50ZR22**	Electrolytic, 0.22μF, 50V
C207		**ECEA50Z3R3**	Electrolytic, 3.3μF, 50V
C208		ECKD1H223ZF	Ceramic, 0.022μF, 50V, +80 −20 %
C209		ECKD1H103MD	Ceramic, 0.01μF, 50V, ±20%
C210		ECCD1H390KC	Ceramic, 39pF, 50V, ±10%
C211		ECKD1H223ZF	Ceramic, 0.022μF, 50V, +80 −20 %
C212		ECKD1H103ZF	Ceramic, 0.01μF, 50V, +80 −20 %
C213		ECKD1H223ZF	Ceramic, 0.022μF, 50V, +80 −20 %
C214		ECCD1H070DC	Ceramic, 7pF, 50V, ±0.5pF
C215		ECKD1H223ZF	Ceramic, 0.022μF, 50V, +80 −20 %
C220		ECKD1H103ZF	Ceramic, 0.01μF, 50V, +80 −20 %
C301		**ECEA50Z1**	Electrolytic, 1μF, 50V
C302		**ECEA50MR22R**	Electrolytic, 0.22μF, 50V
C303		**ECEA50M3R3R**	Electrolytic, 3.3μF, 50V
C304		**ECEA50M1R**	Electrolytic, 1μF, 50V
C305		ECQS1471JZ	Polystyrene, 470pF, 125V, ± 5%
C306, 307		ECKD1H221KB	Ceramic, 220pF, 50V, ±10%
C308		**ECEA1HS100**	Electrolytic, 10μF, 50V
C309		**ECEA1ES101**	Electrolytic, 100μF, 25V
C310		ECQM1H822KZ	Polystyr, 0.0082μF, 50V, ±10%
C311		ECQS1H562JZX	Polystyrene, 5600pF, 50V, ± 5%
C312		ECQS1562JZ	Polystyrene, 5600pF, 125V, ± 5%
C313		**ECEA1CS330**	Electrolytic, 33μF, 16V
C314		**ECEA1AS101**	Electrolytic, 100μF, 10V
C315		**ECEA50ZR47**	Electrolytic, 0.47μF, 50V
C401, 402		ECQM1H102KZ	Polyester, 0.001μF, 50V, ±10%
C403		ECKD1H471KB	Ceramic, 470pF, 50V, ±10%
C404		ECQM1H152JZ	Polyester, 0.0015μF, 50V, ± 5%
C405, 406		ECQM1H153JZ	Polyester, 0.015μF, 50V, ± 5%
C407, 408		**ECEA50Z2R2**	Electrolytic, 2.2μF, 50V
C409, 410		**ECEA1HS100**	Electrolytic, 10μF, 50V
C411		ECKD1H103ZF	Ceramic, 0.01μF, 50V, +80 −20 %
C412		**ECEA1JS4R7**	Electrolytic, 4.7μF, 63V
C413, 414		ECQM1H472KZ	Polyester, 0.0047μF, 50V, ±10%
C601, 602		**ECEA50Z1**	Electrolytic, 1μF, 50V
C603		**ECEA50Z1**	Electrolytic, 1μF, 50V
C604, 605		**ECEA1HS100**	Electrolytic, 10μF, 50V
C606		**ECEA50Z2R2**	Electrolytic, 2.2μF, 50V
C607		**ECEA1ES220**	Electrolytic, 22μF, 25V
C610		**ECEA50Z2R2**	Electrolytic, 2.2μF, 50V
C611		**ECEA1HS100**	Electrolytic, 10μF, 50V
C612	⚠	**ECEA50N1**	Non-Polar Electrolytic, 1μF, 50V
C613		**ECEA50Z3R3**	Electrolytic, 3.3μF, 50V
C614		ECKD1H223ZF	Ceramic, 0.022μF, 50V, +80 −20 %
C701 [XA] only	⚠	ECKDMY103PF	Ceramic, 0.01μF, 125VAC, +100 −0 %
C701 [Other Areas]	⚠	ECKDKC103PF	Ceramic, 0.01μF, 400VAC, +100 −0 %
C702		**ECEA1VS221**	Electrolytic, 220μF, 35V
C703		**ECEA1CS222**	Electrolytic, 2200μF, 16V
C704		**ECEA1AS101**	Electrolytic, 100μF, 10V
C705		**ECEA1VS102**	Electrolytic, 1000μF, 35V
C706		**ECEA1VS221**	Electrolytic, 220μF, 35V
C707		**ECEA1CS471**	Electrolytic, 470μF, 16V
C708, 709		ECKD1H103ZF	Ceramic, 0.01μF, 50V, +80 −20 %
C710		**ECEA1ES101**	Electrolytic, 100μF, 25V
C711		**ECEA1HS101**	Electrolytic, 100μF, 50V
C730 Except for [XA & XE]	⚠	ECKDKC103PF	Ceramic, 0.01μF, 400VAC, +100 −0 %
C901, 902		ECKD1H103ZF	Ceramic, 0.01μF, 50V, +80 −20 %
C903		ECKD1H103ZF	Ceramic, 0.01μF, 50V, +80 −20 %
C904		**ECEA1VS221**	Electrolytic, 220μF, 35V
C905		**ECEA50MR33R**	Electrolytic, 0.33μF, 50V
C906		ECQM1H103KZ	Polyester, 0.01μF, 50V, ±10%
C907		**ECEA50M4R7R**	Electrolytic, 4.7μF, 50V
C908		ECQM1H103KZ	Polyester, 0.01μF, 50V, ±10%
C909, 910		**ECEA1AS470**	Electrolytic, 47μF, 10V
C913		ECCD1H270KC	Ceramic, 27pF, 50V, ±10%
C914		**ECEA0JS471**	Electrolytic, 470μF, 6.3V
C915		**ECEA0JS102**	Electrolytic, 1000μF, 6.3V
C916		**ECEA1AS101**	Electrolytic, 100μF, 10V
C917		**ECEA1HS100**	Electrolytic, 10μF, 50V
C918		ECKD1H223ZF	Ceramic, 0.022μF, 50V, +80 −20 %
C919		**ECEA1AS101**	Electrolytic, 100μF, 10V
C921		ECKD1H103ZF	Ceramic, 0.01μF, 50V, +80 −20 %
C922		ECKD1H103ZF	Ceramic, 0.01μF, 50V, +80 −20 %
C961 [XA] only		**ECEA1ES220**	Electrolytic, 22μF, 25V
C981		**ECEA1AS221**	Electrolytic, 220μF, 10V

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an alle Kundendienst-Zentralen
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